

FOR THE
IB DIPLOMA

Theory of Knowledge

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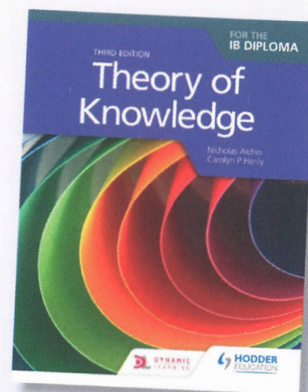
Theory of Knowledge Third Edition 9781471804151

This third edition of *Theory of Knowledge for the IB Diploma* provides a thought-provoking guide through the eight Ways of Knowing and eight Areas of Knowledge covered in the IB Diploma Programme.

How do we know what we know? What is the difference between shared knowledge and personal knowledge? The book looks at the nature of knowledge in different disciplines and encourages students to evaluate critically information from a wide range of sources.

The authors are the previous Chief Assessor Nicholas Alchin, who for this new edition is joined by Carolyn Henly, an experienced examiner, teacher and trainer for TOK.

- Guides students by helping them examine the nature of knowledge and ways of knowing
- Develops diverse and balanced arguments by raising questions in a variety of contexts
- Includes new chapters on Memory, Imagination, Intuition and Faith
- Covers Religious and Indigenous Knowledge systems
- Provides support for Assessment



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I would like to thank all the TOK students I've worked with, both current and past – every year teaches me more about the course than what I'd learn on my own. I'd also like to thank my favourite teachers, Anita, Cian and Finn.

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Theory of Knowledge

Skills for Success

John Sprague

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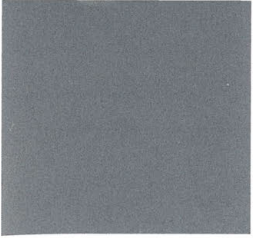
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Contents

How to use this book iv

Chapter 1 Knowledge questions 2

Chapter 2 The knowledge framework 14

Chapter 3 Personal and shared knowledge 48

Chapter 4 Assessment 60

Glossary 117

Index 118

How to use this book

Introduction

Teaching Theory of Knowledge (TOK) is a genuine pleasure! It is so different from any other sort of teaching I do. This is because when you take your first steps on the TOK journey, you are undergoing what might be the biggest journey in the IB.

TOK will be a brand new subject to you and the sort of approach needed to study it is one that you will not have encountered before. Even if you have never taken Economics, Geography or Environmental Systems and Societies, you basically know what it means to study a subject, whether it is new or not: the material will be confusing and challenging at first, but you learn the concepts, you learn to approach the topics and you get on with it.

TOK, however, is fundamentally different, both in terms of content and approach. Actually, there is not really any 'content' that you have to learn throughout the course. In fact, the 'content' of TOK is really just the content from your other IB subjects. In TOK, rather than learning new things, you are learning 'how to do something' quite different. In TOK you don't gain new knowledge, you learn about how to think about that knowledge.

The TOK course is built around a fundamental distinction between subject-specific content and a higher order questioning about that content. In Psychology, for example, you will learn about the 'scientific method' and how it has been used to construct biological, cognitive and socio-cultural perspectives about human behaviour; in chemistry you will also learn about the scientific method and how it has helped construct knowledge about elements and their relationships to one another. In history you will become adept at using the 'historical method' in investigations of past events. Philosophy will give you tools to explore the meaning and significance of human concepts and behaviour, while in literature you will learn about texts in different literary genres and the analysis of them.

Some of this will be new and all of it will be challenging, but in the end it won't be significantly different from the methods of learning you were using before the Diploma. But in TOK you have to become comfortable asking questions about what makes a psychologist's approach to creating knowledge in his or her field different from how a design technologist constructs it in theirs. You develop questions about what makes one 'type' of knowledge different from another, or questions about the reliability of various forms of knowledge.

The journey for the TOK student often starts off in obscurity, but nearly always ends in genuine 'lightbulb' moments of 'Ah! *That's* what this is all about!' I have never had a student return from university and say to me, 'Thank goodness, I took that physics class (or economics, or philosophy, ...)' because, generally, universities will cover the material in the way that they want it covered regardless of what the students studied beforehand. But over and over again throughout my teaching career, however, I have heard from alumni, 'Thank goodness I took TOK! It was the best preparation for university that the IB could have provided' or 'I didn't really understand what TOK was about until I was at university and I was streets ahead of the other students who didn't take TOK.'

Because TOK is so different in *kind* from their other subjects, students are often slow to come to understand it. Most ultimately *do* come to an understanding of the subject, but it is a challenging journey. This book is an attempt to help ease that process.

■ About the TOK course

The TOK course is about the nature of knowledge and how we construct our knowledge. Although there are a lot of different concepts in the course, none are the content of the course.

One of the challenging aspects of the course is the various tools and concepts which come with it, for example, AOK, WOK are a few of the many acronyms in addition to the broader references to eight subject disciplines and eight methods of gaining knowledge and a whole 'framework' with its five elements.

You are offered a number of tools with which to explore how we create and what we mean by knowledge. The main ones are:

- **Areas of knowledge (AOK)** which are the main 'disciplines' or 'fields of knowledge'. The idea is that each maps the world in interestingly different ways.
- **Ways of knowing (WOK)** which are meant to identify various sources of knowledge, or ways in which we access, create, disseminate and use knowledge.
- The **knowledge framework** which is a set of five broad aspects of knowledge meant to help you compare and contrast the various AOKs and apply the WOKs.
- The **personal** and **shared knowledge** distinction is an attempt to encourage students to think about the relationship between individual knowers (for example, *one particular* scientist) and the wider community of which they are a part (that is, the *community* of scientists).

These elements are offered as the primary concepts of the course in the hope that they will give you a lens through which you can examine how knowledge works. None of these tools, however, should be thought of as things which cannot be questioned. Questioning these sorts of categories given to you in a textbook is exactly what the TOK course is about!

■ How to use this book

The point of this book is to explore some of these tools and concepts to help structure the day-to-day classroom experience of the TOK student. It provides a context which will help you to develop the skills required for success in the assessments.

First and foremost I will be exploring the nature of the most fundamental entity in the TOK course, the **knowledge question** and how it relates to the knowledge framework and the distinction between personal and shared knowledge. These three elements sit at the very foundation of the course and understanding them (in addition to the various AOKs and WOKs) will provide the comparative structure essential to success.

Key features of the book include:

TOK TRAP

There are many things that TOK students do again and again which can get them into trouble when it comes to assessment. These sections highlight possible pitfalls that students can too easily fall into. Rather than a 'Don't do this' list, it is full of 'Proceed with caution' warnings. A student paying careful attention to what he or she is doing can take even the most over-used example and turn it into a unique and insightful approach.

DEEPER ANALYSIS

A key feature of a successful presentation or essay is the shift from simply 'identifying' or 'explaining' good TOK ideas to offering a deeper analysis of them. This shift can be a real challenge for students and these sections give some indication of how such an analysis might work.

IN PRACTICE

Very often TOK students find themselves leaving a class thinking, 'What was *that* all about?!' When the discussion is too abstract, the practical application of the TOK skills is lost. TOK is meant to be a practical tool to help you uncover questions about knowledge in the real world, not just a series of random and contentious ideas or debates. These sections offer guidance on how the topics being discussed might be practically applied in a TOK presentation, essay or classroom discussion.

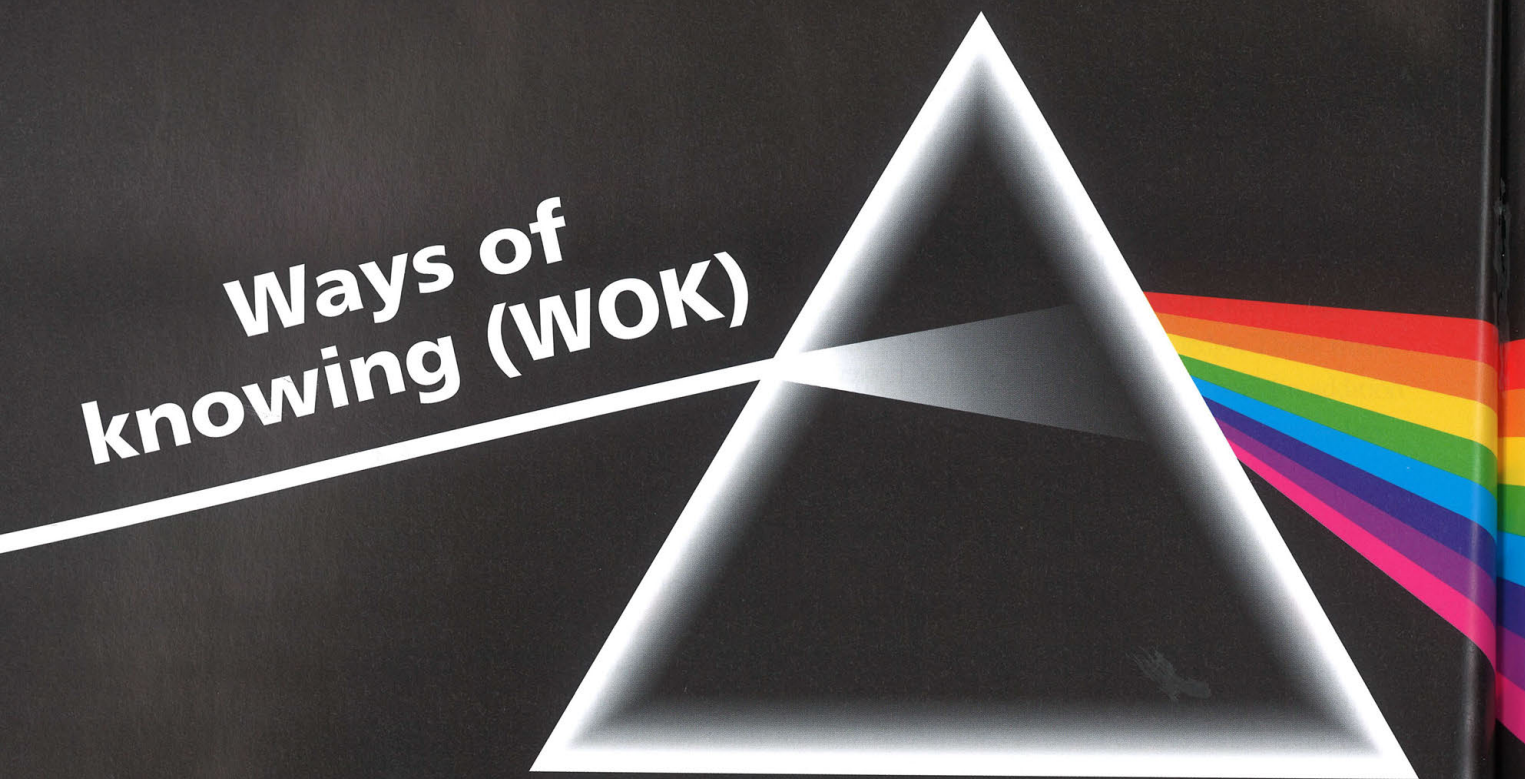
■ BUILDING KNOWLEDGE QUESTIONS

Another real challenge for TOK students, but one that is absolutely crucial to assessment success, is formulating genuine knowledge questions. These sections help you think through the issue in terms of how you might develop the ideas into genuine knowledge questions that you might explore in an essay, presentation or classroom discussion.

Finally, I will offer advice on how to approach the TOK assessment, the essay and the presentation. Having been an examiner for many years, I can identify a number of mistakes that students make again and again, even though they are relatively easy to avoid. I will also identify certain elements and skills that the best students tend to offer. The TOK assessment demonstrates a genuine challenge, even to the best and the brightest TOK students, but there are a number of tools and skills which can make the process less painful, less confusing and ultimately lead to success.

You should not, however, think of this course as assessment driven – it is far too rich for that. A relatively short essay and a short presentation are simply not adequate to ‘test’ the skills that TOK will help you develop. So the genuine value of the course is developed day to day, class by class, and the skills come to fruition, not in the assessments, but in the extent to which they change the ways that you approach knowledge in the world. The TOK course, in other words, is not only about teaching you things, but also about you learning a new way to ‘be’ in relation to the knowledge that you are developing. I hope that this book can clarify and simplify a few of the tools and skills which will make the course more enjoyable and ultimately lead to greater success.

I wish you well in your studies, and your TOK journey!



Ways of
knowing (WOK)

mathematics **the**
the natural
sciences **religious**
Areas of **knowledge**
(AOK) **systems**
ethics
the arts **the human**



history

indigenous
knowledge
systems

sciences

emotion

faith

imagination

intuition

language

memory

reason

sense perception

Knowledge questions

What is a knowledge question?

■ Knowing about knowing

The entire Theory of Knowledge (TOK) course is built around one central concept: the 'knowledge question' (or KQ, for short). TOK is not like any other IB course. Whereas students in other subjects are expected to focus on developing knowledge within a discipline, in TOK, students are asked to take a step back from the subject and think about what it is that they are 'doing' when they are studying, for example, history or maths.

It is a little bit like sport: when playing football or cricket or baseball, you do not consciously think about the rules (other than remembering to follow them). But you can later step back from playing the game and think about the rules themselves: Why are they like that? What other games follow similar rules?

This is similar to the relationship between TOK knowledge questions and subject questions. For example, as a historian you might ask:

What is the date of this castle wall?

As a TOK student you might ask:

How reliable is the written testimony relevant to the knowledge of the history of this castle, or of this castle wall?

As a biologist you might ask:

What is the effect of this drug on the growth of a tumour?

As a TOK student you might ask:

How can I test the effect of this drug in a way which overcomes personal bias in the gathering and interpreting of data?

I don't mean to suggest that historians and biologists don't also ask these questions. They certainly do! Being a good historian or biologist means that you have asked these questions, but often this type of thinking doesn't happen while you are learning the basics in school. (This is why so many students return from college to say how much they appreciate having taken TOK.) This shift out from under the rules of a subject to exploring the rules themselves is a tricky move, but success in TOK requires that you do your best to understand it.

Despite knowledge questions being central to the course, it is often a genuine challenge for students to learn to identify them and understand how they are different from the other questions they are exploring in their subjects. Students are very good at identifying interesting, debatable issues in the world and exploring them using the skills they develop in their classes. A good subject question, however, is not necessarily a good 'about that' knowledge question.

■ Knowledge questions

Understanding just what is a knowledge question is therefore crucial for making sense of the Theory of Knowledge course, and for succeeding in the TOK assessment.

As the TOK Subject Guide says, a good knowledge question should be:

- about knowledge
- an open question (one which is obviously debatable)
- general.

And I usually add:

- clearly related to elements of the TOK course.

But what does each of these mean?

■ 1 Knowledge questions must be about knowledge

Although this is fundamental, this is often the biggest pitfall for students and teachers. In the context of assessment, getting this right cannot be understated. The question you ask in your presentation and the questions you use to explore in the prescribed titles for the essay must be questions *about* knowledge. Sometimes the distinction between a ‘second-order’ question as opposed to a ‘first-order’ question is used to illustrate what a good knowledge question is like.

Harvard classicist Mark Schiefsky offers the following definitions:

First-order knowledge is knowledge about the world, whether theoretical or practical in orientation; it may be a knowledge of how things are, or a knowledge of how to do or make things.

By **second-order knowledge** I mean knowledge that derives from reflection on first-order knowledge: for example, a method for generating new procedures. Second-order knowledge ... *sets out a conception or norm for what knowledge is in a particular domain*. The idea of mathematical proof is a paradigmatic second-order concept, since it involves a specification of the conditions under which mathematical assertions can be accepted as true.

Source: www.edition-open-access.de/studies/1/12/index.html

In other words, first-order questions are questions about the world that a subject might ask and which seek to find an answer within that subject. But it is the second-order knowledge that you need to be firmly focused on in your TOK classrooms and assessment. This sort of knowledge sets the rules by which the first-order knowledge is constructed by the community or acquired by the individual.

Here are some examples of first-order knowledge claims (although not necessarily true) and first-order questions that you might see within your subject specific classrooms:

AOK	First-order knowledge claim	First-order knowledge question
Arts – Literature	<i>The Red Wheelbarrow</i> is about Williams' emotional state at a particular time.	What is William Carlos Williams' poem <i>The Red Wheelbarrow</i> really about?
Languages	Bullfighting is crucial to Spanish identity.	How important to Spanish culture is bullfighting?
History	The Second World War was caused by the economic situation in Germany at the time.	What were the primary causes of the Second World War?
Economics	A socialised health care system helps individuals avoid the financial burden of illness.	What are the financial benefits of a socialised health care system?
Biology	Photosynthesis slows down during the winter.	What is the effect of sunlight on photosynthesis?
Chemistry	Tennessine was first discovered in 2010.	How many more fundamental elements will be found with new technology?
Mathematics	The largest known prime number is over 17 million digits long.	Is there a greatest prime number?
Arts – Music	Beethoven's opening sketches in his <i>Ninth Symphony</i> foreshadow the development of the entire composition.	What are the major themes and motifs of Beethoven's <i>Ninth Symphony</i> ?
Ethics	Withdrawing life support can shorten the otherwise long-term misery of the patient.	Is euthanasia acceptable on Consequentialist (or any other theory's) grounds?
Politics	Even in liberal countries, some material is only available legally to adults.	Should governments allow free access to knowledge?

In each of the cases in the table, both the knowledge claim and the knowledge question are first-order because they are claims and questions about objects or concepts in the world; finding the answer depends on using the methods and processes that the relevant subject teaches.

Second-order questions, on the other hand, do not seek answers 'within' the subject, but are questions about how that subject goes about answering the questions it asks. They are questions about the processes of constructing knowledge, and about what counts as knowledge in that field, not questions about the knowledge itself. For example, I might ask the first-order question about whether or not UFOs exist, but I would ask a second-order question if I wondered whether the testimony of my Uncle Bob is enough to persuade me on the matter. The first question is about things in the world; the second question is about the rules of creating knowledge about those things.

TASK

1 Before you read on, see if you can identify second-order questions related to each of the first-order questions in the table above.

Below is a list of possible knowledge questions related to the first-order questions in the table on page 6. Each is only one possible knowledge question; you might have come up with others.

AOK	Second-order knowledge claim	Second-order knowledge question
Arts – Literature	To be a reliable interpreter of art, one must have been trained at university.	Would a 17-year old’s interpretation of poetry be as reliable as a university professor’s?
Languages	Some concepts in a language cannot be fully understood unless you have grown up in that culture.	How does not living in a culture make it difficult to understand about the importance of traditions within that culture?
History	Historians sometimes use their own values as lenses to explore the past.	How can we weigh up various ‘causes’ of an historical event to determine its importance?
Economics	Different economic models suggest different outcomes in relation to policy changes.	Is the concept of ‘benefit’ too qualitative to be measured effectively?
Biology	Technology needs to produce data that is reliable.	How can we be sure that the technology used to conduct experiments is reliable?
Chemistry	The Periodic Table models how elements are related to one another in terms of atomic weight.	What role do models play in developing new knowledge in the natural sciences?
Mathematics	Mathematics makes extensive use of deductive argument.	When is trial and error an appropriate method to construct mathematical knowledge?
Arts – Music	Being educated in music teaches you to search for and appreciate patterns and development in musical structure.	How does one become an ‘authority’ in making aesthetic judgements?
Ethics	It is sometimes a challenge to predict just what will happen in medical treatments.	How might the role of emotion in Consequentialism make objective ethical knowledge impossible to develop?
Politics	Some knowledge is inappropriate for certain people.	In what ways does the limiting of knowledge by authority help or hinder the progress of knowledge?

Hopefully in each of the examples above you will be able to see how the focus of the inquiry and the questioning have shifted from knowledge about the world to knowledge about knowledge.

In Chapter 2 we will be looking at the knowledge framework, which is an excellent tool to help identify knowledge questions and maintain your TOK analysis on knowledge. Knowledge questions also are clearly concerned with a number of concepts having to do with reliability, credibility, justification and source of knowledge.

Another suggestion would be to continually remind yourself of the need to focus on the following elements of knowledge:

- The construction of knowledge within an area of knowing (AOK).
- The acquisition of knowledge within an AOK.
- The nature of an AOK.
- The experience of knowing within an AOK.

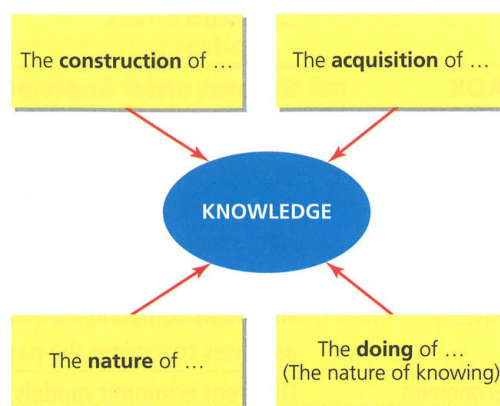
If you are genuinely exploring one of these four elements, you are probably still developing a knowledge question. These are not thought of as being discrete aspects or distinct from one another; there is quite a bit of overlap as you will see.

These elements are not ‘official IB concepts’ but concepts which I have found helpful in helping students to think about what counts as being ‘about knowledge’.

■ Construction of knowledge

This refers to the generally accepted methods and standards of how knowledge is created by people working in the field. Think of this in relation to the scope and application, concepts and language and methodology elements of the knowledge framework.

Each AOK decides what constitutes a genuine knowledge claim within a field. For example, when constructing knowledge in the sciences about UFOs, the testimony of a single individual is not enough: the rules of knowledge construction mean that many people must have observed the event and it must, in principle, be observable again.



The elements of knowledge

■ Acquisition of knowledge

This would refer to the ways in which individuals come to know things. In the development of new knowledge, what are the personal and ‘local’ influences on an individual as he or she tries to create knowledge? This is different from the psychological phenomenon of ‘learning’ something. Learning is partly about memorising, retaining, being able to apply ideas and knowledge. Developing knowledge in the TOK sense has more to do with one’s own personal engagement with the traditions and methods of an AOK. As a personal knower, you have to, as it were, join a community and follow their rules as you construct knowledge according to their rules and procedures.

For example, I might want to learn a new language, but coming to understand the importance or emotive content of certain concepts within a language might require full immersion and may involve years of living within a culture, and some concepts might never be fully appreciated by a second-culture speaker. For example, the Danish *hygge*, the Portuguese *saudade* or the German *gemütlich*.

Another example of what the acquisition of knowledge means would be to think about the constraints on hunches or intuition in the building of scientific knowledge. I might have a hunch that some fact is true, but my personal intuition cannot justify the knowledge. So in developing knowledge claims in science (acquisition of knowledge), I have to test my own intuition using accepted methods within the field (construction of knowledge). The knowledge framework’s links to **personal knowledge**, methodology and concepts, and language might be obvious links to this point.

■ Nature of knowledge

This refers to elements most clearly explored by the scope and application element of the knowledge framework. AOKs ask certain types of questions. The natural sciences, for example, are called ‘natural’ for a specific reason: they explore the workings of the natural world. Whereas the ‘human’ sciences (while still using the natural sciences)

will focus on developing knowledge about human beings and how they behave. (This is not to imply that human beings are not 'natural'.)

The interplay between physics and mathematics is interesting because the nature of those two AOKs seems quite distinct – physics tries to describe forces and events in the world, while mathematics is the science of the logical relationships between numbers and quantities – but they are also intimately related.

Similarly, you might suggest that the nature of artistic knowledge or aesthetic judgement is to uncover subjective facts about the viewer, as opposed to facts about the object of the art itself.

■ Nature of knowing

Finally, it is clear that some forms of knowledge are 'non-propositional', meaning that rather than suggesting that something is true or false, we also say that we know how to do things. I know how to tie my shoes in the morning, but would find it a genuine challenge to describe this to someone. I know how to ride a bike, but knowing this is quite different from knowing a series of facts about bicycle riding. I know how to juggle, but only learned through the doing of it; the reading of a book was helpful but was not enough. This type of knowing does not necessarily fit well with the knowledge framework, but it is certainly a reasonable topic for investigation. You might, for example, explore what you have to know *how* to do if you want to be an anthropologist or an artist. Many resources devoted to TOK, however, neglect this form of knowledge, focusing instead on propositional knowledge.

While working in TOK, you must continually think to yourself, '*Is my discussion genuinely about knowledge?*' Making sure that your discussion fits into one of these four categories is one helpful way of staying on track.

TOK TRAP

Asking second-order questions in ethics

Be very careful when exploring ethics in your TOK presentation.

'*Is capital punishment right or wrong?*' is **not** a knowledge question. It is certainly interesting and debatable, but it is a first-order question within ethics.

You would want to shift the question to focus on knowing: something like (but not limited to!) '*What effect does theory in the social sciences have when we make ethical judgements?*'

If you are hoping to explore Ethics as an AOK, you must be very careful to avoid this trap. If you are asking about the rightness or wrongness of any action, or whether it is 'ethical' or should be allowed, then you might be asking a first-order question. Look at the question you are asking and if the answer is anything to do with '*Is right (or wrong)*' or '*Should be allowed*' or '*Is ethical*', then you have probably not asked a second-order question. Examiners (and presentation moderators) will mark you down for this.

TOK TRAP

Use of WOKs in your knowledge question

Many times students will want to explore a particular WOK in the context of some wider knowledge question. This can result in a perfectly good TOK investigation and most of the TOK textbooks have separate chapters devoted to exploring the use and limitations of each of the WOKs. Often, however, students (and sometimes even teachers) treat them in isolation; so it's no wonder that students are led to believe that a discussion of, for example, optical illusions or the reliability of memory are, themselves, suitable TOK. But is this genuine TOK? There are a number of problems with this approach.

- First, you must be careful not to suggest that a WOK's influence in some knowledge dilemma is as easily traceable as your question might suggest.

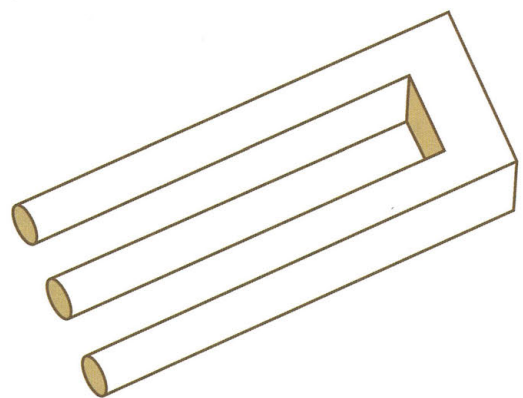
'How does emotion affect memory?', for example, might be a good knowledge question, depending on the analysis, but what often happens is that a student will simply 'speculate' that people remembering things will have been influenced by emotion in some way or another and give plausible instances of it happening. One common example is to analyse the decision-making process of a person and speculate that he or she was influenced by their emotions. This is an extremely difficult claim to make unless you have clear evidence that this was the case. Your own speculation that it probably happened is not enough to make your analysis credible.

In other words, the claim about emotion's influence (more properly 'the influence of emotions') is an empirical hypothesis and unless the student has done the research, it will be mere speculation. In the end, however, many of the questions of the 'How does some WOK interact with some other WOK?' variety are really first-order psychological claims about how these things interact in the mind.

IN PRACTICE

Always avoid speculation in a TOK analysis. You must be credible for your analysis to be successful.

- Second, working with WOKs in this way often leads students to suggest that analysing the effect of any one WOK on a knowledge question is a *fait accompli*, that reason will always lead to some particular conclusion, or emotion always leads you to do this or that. The effects of WOKs on a knowledge question are not like boarding a train: they do not always necessarily lead to some particular destination.
- The biggest issue with the use of WOKs in a TOK presentation, however, is suggested above: very often they are not TOK. Take the old favourite, 'To what extent do emotion and reason influence decision making?' I say 'old favourite' but, really, this should be no one's favourite!
 - i 'To what extent ...' is vague and either calls for a level of precision which is unnecessary (for example, 'About 57%' as a response is not very credible) or something so vague as to be nearly meaningless (for example, 'To a great extent').
 - ii 'Making decisions' is not TOK. We make decisions about knowledge (what to know) within the context of an AOK and the focus should be on the context provided by the AOK. Just focusing on the process of decision making is far too personal and probably more about psychological processes, not about knowledge. To become a genuine question about knowledge, the student will have to explore the 'consequences' of that interplay in the context of some AOK. What you say about reason and emotion, for example, must be part of the analysis or an example of some more general point about knowledge in an AOK.



How many prongs does this fork have?

- Exploring optical illusions like the two- or three-pronged fork, or the undulating circle designs in the context of sense perception should be part of a larger question about whether scientists, for example, can trust their observations and the effect of this on the reliability of scientific knowledge or the safe-guards built into the scientific method. An exploration of emotion's effect on memory should be explored in the context of the reliability of eyewitness testimony in history. Whether faith dilutes your reason might be explored in the larger question of how religious knowledge systems use notions such as justification in their arguments. In other words, you should be looking at what 'effects' the limits of the WOKs you are working with have on the construction of knowledge in an AOK.

Lots of interesting things being said about the reliability of WOKs ...

Look, illusions! →

Emotions – boo! →
Reason – yay!

Eyewitnesses are →
rubbish

Language, right? →

Rational faith! →

How do these help you understand claims made within AOKs?

Can scientists trust their observations?

Does the scientific method guard effectively against prejudice?

Can historians rely on testimony?

Can language be used neutrally when describing human behaviour?

How is justification used in theological arguments?

Don't stop with WOKs

■ 2 Knowledge questions should be open

In addition to being about knowledge, a good knowledge is an open question: one that is obviously debatable and cannot be answered simply with 'yes', 'no' or 'maybe'. The question should require an analysis that shows the complexity behind the knowledge issues involved. Questions such as, '*Under what conditions and to what effect ...?*', '*How does ...?*' or '*What is ...?*' often can be the basis of good knowledge. This is not to say that you cannot develop a successful presentation around a closed question. Keeping the question phrased as an open question, however, will allow for more identification and exploration of alternative perspectives.

'*Does the historical method incorporate elements of the scientific method?*' might provide the starting point for a good presentation, but it too easily leads the student into a descriptive essay, just giving examples of when it does. But '*What are the consequences for historical knowledge when trying to apply a scientific method in justifying historical claims?*' both allows the student to show how history makes use of elements of the scientific method, and extends the analysis into a more sophisticated exploration of the consequences of such a move.

Remember: an open question will help avoid descriptive analyses, and descriptive analyses are generally not successful in TOK assessment.

■ 3 Knowledge questions should be general

The suggestion here is that the knowledge question is not about a real life or concrete situation. We often call it 'decontextualised'. The idea would be that given one well-formulated knowledge question, you might be able to find a number of quite different concrete examples which could serve as examples. This is partly another way of emphasising the need to make sure your knowledge question is a genuine second-order

question. The importance of general knowledge questions is particularly important in the essay and presentation where you will be expected to be able to offer a number of sometimes quite different examples in order to illustrate a general point about knowledge.

■ 4 Knowledge questions should make use of TOK concepts and vocabulary

The TOK course is structured around a number of concepts: the AOKs and WOKs are the primary ones. It is a good idea then to put those concepts to good use when framing your knowledge question, as this will help guarantee that they are of a genuine second-order nature and are properly general or decontextualised.

Many good knowledge questions reference elements of the TOK specification and place them in relation to one another. The presentation's argument then becomes about exploring and interrogating those relationships. Earlier, we questioned the relationship between economics (human science) and mathematics. Some good knowledge questions will not explicitly reference another AOK or WOK, but explore notions such as reliability, certainty or justification, which are certainly common TOK themes.

Other concepts that can be used might include things such as bias or evidence. Including these concepts in the knowledge question itself (not just in the analysis) is a good way to remind yourself that you should be focusing clearly on knowledge. The knowledge framework is another excellent source of language to use: when in doubt see if your question could be better formulated through reference to some of the knowledge framework elements.

■ Using knowledge questions in essays

The assessment criteria for the TOK essay explain that 'there is a sustained focus on knowledge questions connected to the prescribed title'. Understandably this leads many students and teachers to think that the essay must be peppered with any number of knowledge questions, explicitly stated. This is not the case. The number one focus of the essay must be the 'prescribed title' as it is stated. Stating knowledge questions explicitly in the essay is perfectly appropriate, of course, but rather than treating them as a list, you should be identifying them naturally as they arise during the unpacking and exploration of the prescribed title. They should serve the students in his or her thinking to guarantee that the student does not divert from the key issues present in the prescribed title: they are used, in other words, to maintain clear relevance and should be used as steps in your larger analysis.

IN PRACTICE

For example, one of the May 2016 prescribed titles asked students to evaluate the usefulness of applying the principles of natural selection as a metaphor for how knowledge develops: *'Knowledge within a discipline develops according to the principles of natural selection.'* How useful is this metaphor?

One way of unpacking the title would be to explore knowledge questions such as:

- What are the effects and impacts of new evidence to established knowledge claims in the sciences (or some other AOK)?

- How do prevailing social practices provide a framework for evaluating common knowledge?

The key to the use of any knowledge question, however, would be to use them to create a common and coherent narrative throughout the piece. The knowledge questions that you do decide to raise should be related in that they point towards a particular approach, namely your own!

TASKS

- 2 Consider the knowledge questions you developed above and see if you can make them *better*, by putting the ideas in this section to good use. Can you include reference to an AOK or WOK? Can you add some sort of *relation* between concepts and ideas? Learning to take one KQ and improving it is a valuable skill when it comes to the assessment.
- 3 Develop a list of genuine knowledge questions that you think you might have to engage with in order to develop a full response to this title. See if you can map the connections between them in the form of a flow chart – moving from one knowledge question to the next and culminating in a full response to the title.

TOK TRAP

Unanswered knowledge questions and unanswered prescribed titles

Many students will state a number of knowledge questions at the end of their introductory paragraph and then leave them unanswered or, worse yet, will end up answering the knowledge questions instead of the initial prescribed title. In both of these cases the essay could suffer from being irrelevant.

Whenever you identify a specific knowledge question you should also make sure it is clear in the reader's mind just why you think it is relevant to the title and why your approach to the title requires you to raise it; this will show good analysis and evaluation skills.

■ Using knowledge questions in presentations

The importance of the knowledge question for the TOK presentation cannot be underestimated. The whole point of the presentation is to pose, then explore a knowledge question. If a student has chosen to explore a question which is **not** about knowledge, then there is very little he or she can do to go on to score well.

IN PRACTICE

A presentation might be engaging, interesting, insightful and still not score well against the TOK criteria if the presentation is not about TOK. I might deliver a great presentation on the historical influences of the early Gothic novel, but if I present this as part of my physics Internal Assessment, I'm not going to score well. TOK does have a particular approach and if that approach is not utilised, then scores will suffer. The whole point of this chapter is to give guidance on what the nature of a good knowledge question is and how to differentiate them from first-order, discipline-based questions.

Many students use 'subsidiary knowledge questions' in their analysis. Again, this is not 'necessary' but they are helpful in the same way they are helpful in the essay: they are used to further unpack the initial question. Students need to avoid the same traps mentioned in relation to the essay: randomly posing further knowledge questions with little or no relation to one another or to the title; posing knowledge questions without actually answering them; or posing so many questions that it is not possible to develop a sophisticated analysis of them.

Remember that the presentation is only 10 minutes (per person), so posing too many knowledge questions will make it a challenge to develop an analysis which shows genuine depth and insight. My advice is 'the fewer the better'.

The knowledge

Scope/applications

- What is the area of knowledge about?
- What practical problems can be solved through applying this knowledge?
- What makes this area of knowledge important?
- What are the current open questions in this area – important questions that are currently unanswered?
- Are there ethical considerations that limit the scope of inquiry? If so, what are they?

Concepts/language

- What role does language play in the accumulation of knowledge in this area?
- What are the roles of the key concepts and key terms that provide the building blocks for knowledge in this area?
- What metaphors are appropriate to this area of knowledge?
- What is the role of convention in this area?

Methodology

- What are the methods or procedures used in this area and what is it about these methods that generates knowledge?
- What are the assumptions underlying these methods?
- What counts as a fact in this area of knowledge?
- What role do models play in this area of knowledge?
- What ethical thinking constrains the methods used to gain knowledge?

framework

Historical development

- What is the significance of the key points in the historical development of this area of knowledge?
- How has the history of this area lead to its current form?

Links to personal knowledge

- Why is this area significant to the individual?
- What is the nature of the contribution of individuals to this area?
- What responsibilities rest upon the individual knower by virtue of his or her knowledge in this area?
- What are the implications of this area of knowledge for one's own individual perspective?
- What assumptions underlie the individual's own approach to this knowledge?

The knowledge framework

Using the knowledge framework

The TOK course is about the investigation of the nature of knowledge or knowing how people construct or acquire knowledge. This is quite an abstract challenge, one that baffles many students. The **knowledge framework** is a useful way of breaking up this challenge into more manageable ideas. Learning what it is and how to use it will help you to structure your thinking about TOK and help you maintain a clear relevance on genuine knowledge questions.

The knowledge framework is not something 'to learn' – it is a tool to help you think about the AOK in a way that will be beneficial in your assessments. You do not need to memorise the five aspects or be prepared to say everything you know about them in your presentation or essay. But you should learn to use it to structure your thinking throughout the course. Calling it a 'framework' means that when you are thinking about knowledge, you have five convenient boxes in which to place your ideas, then, hopefully, break out of them later to make new connections.

■ Why is the knowledge framework useful?

Using the knowledge framework will help you develop second-order thinking about knowledge, which, as you know after reading Chapter 1, is the most crucial part of the TOK course. When you open the subject guide for any of your subjects, you are, for the most part, reading about content within the subject. We might call this 'first-order thinking'. We call them 'first-order' because they are questions that practitioners of the subject would ask within the 'doing' of their subject.

However, by considering the elements of the knowledge framework in relation to these first-order questions, you begin to shift into a series of questions 'about' the knowing of the answers to those questions, not the answers themselves. These are the 'second-order questions' as they are about how we can know the answers provided by the first-order questions.

Once you have used the knowledge framework to begin asking second-order questions, you can use them to begin to develop comparisons between the AOKs; another crucial tool in your TOK skills kit.

How the knowledge framework can be used

Identifying genuine knowledge questions is important to the TOK course but the other crucial element to the course is the ability to compare and contrast the various AOKs: in other words, asking questions about how the various AOKs are similar in some respects and dissimilar in others.

Sometimes the prescribed titles will explicitly ask you to compare or contrast different AOKs, and the knowledge framework is an excellent place to start with this sort of analysis (though it is incredibly helpful for other sorts of analysis as well). When comparing or contrasting two things, for example, it is absolutely crucial to have a

‘comparative key’, which is the focus of the comparison; you need a single element or focus in order to highlight the differences between positions, otherwise you will end up just listing a number of unrelated differences.

Knowledge frameworks therefore can be used to identify ways in which you can compare different AOKs. The five elements of the knowledge framework are concepts which all the AOKs have some relation with. For example, the scope and applications of each AOK can be explored and compared, as can their methods in constructing knowledge. Each AOK has undergone significant historical development and exploring these developments can teach you more about the individual AOKs and their relationships to others. Each utilises certain concepts and language or uses them slightly differently, and the role of personal knowledge plays slightly different roles in each. Understanding and being able to discuss these abstract concepts in relation to AOK will add an analytic and evaluative layer to your approach to TOK.

TASK

- 1 Consider an AOK you have studied, and brainstorm a list of bullet points within each of the elements of the knowledge framework where you describe how you think the AOK relates to that element of the knowledge framework. Look through these and compare across AOKs to develop a larger picture of how the AOKs relate to one another.

Using the knowledge frameworks to create genuine comparisons and contrasts between AOKs will undoubtedly help when developing your presentation and essay, but also using them when just working through your course will offer you the precision needed to get the most out of the TOK course.

IN PRACTICE

Look through some past TOK prescribed titles and identify those that explicitly ask you to consider two AOKs. For each, can you identify an element of the knowledge framework that would allow you to develop an effective comparison?

You might consider the following questions:

- From May 2013: ‘Knowledge gives us a sense of who we are.’ To what extent is this true in the human sciences and one other AOK?
- From November 2011 / May 2012: ‘Knowledge is generated through the interaction of critical and creative thinking.’ Evaluate this statement in two AOKs.

Try this now with prescribed titles which do not mention a comparison between two AOKs. Can you still identify a knowledge framework which

would be the most appropriate to develop just such a comparison? You might consider these following questions:

- From May 2016: ‘Knowledge within a discipline develops according to the principles of natural selection.’ How useful is this metaphor?
- From November 2015: ‘Without the group to verify it, knowledge is not possible.’ Discuss.

Which element of the knowledge framework do you think would be best suited to explore these questions and to develop a comparison between AOKs?

No TOK essay should limit itself to a discussion of only one AOK, so knowing how to put the knowledge framework to use as a tool to identify second-order questions and to develop comparisons is an important skill.

TOK TRAP

Using WOKs as a way of comparing AOKs is dangerous, as it tends to lead to treating the WOKs as if they were discrete entities in themselves and leads to the assumption that one can clearly trace the effect of individual WOKs within AOKs.

IN PRACTICE

- I ask my students periodically throughout the course to add to a knowledge framework form (see below) for each AOK where they capture various ideas about the AOK but structured into the various elements.
- I create a Google Doc for each of the AOKs for the class, but you can do this on your own with a simple Word file or even a sheet of paper.
- Under each of the five elements, jot down ideas about that AOK in relation to that element. It might be about what is distinctive about that AOK in this area or even what interesting similarities there are between AOKs.
- When it comes to writing essays or creating presentations, you can now use those notes and develop an interesting and focused comparison of two or more AOKs in relation to some particular aspect of knowledge.
- Read through the past prescribed titles again and see if that last sentence doesn't sound familiar.

Natural sciences – Knowledge framework

Scope / Applications	■ ■ ■ ■
Concepts / Language	■ ■ ■ ■
Methodology	■ ■ ■ ■
Historical development	■ ■ ■ ■
Links to personal knowledge	■ ■ ■ ■

The following sections will help you to understand the essence of each of the elements of the knowledge framework. This is not an exhaustive discussion of each, but will hopefully be enough to give you an understanding of what each is about so you can proceed to develop the ideas more. As the knowledge framework is a frame, it's there for you to structure and guide your own thinking; it's up to you to add the content. My discussion below is merely a model for how that thinking might go.

■ Scope and applications

The **scope** and **applications** of an AOK refer to what it is that that AOK thinks it is doing. What sorts of questions are being asked in the various AOKs and what sorts of answers are therefore going to be accepted as appropriate?

If you asked me a history question about why the Europeans sailed to all the corners of the world in the sixteenth and seventeenth centuries, and I answered, '*Because the winds took them there,*' you might suggest that I have misunderstood the nature of the question. I told you *how* they moved about, but not *why*; in other words, I have not understood that the scope of historical knowledge includes motives, beliefs and desires of individuals and groups of people, not just what they did and how they did it. The application of historical methods is partly to identify facts about people doing things and moving about, but also constructing ideas about people's thoughts as they were doing so.

In a number of cases, asking questions relevant to one AOK in the context of another is patently absurd: '*What is the mass of charity?*' clearly mixes up the natural sciences which, in part, describes objective features of objects, such as mass, in the world and ethical knowledge, which seeks to identify how we create ethical value. In other words, the scope and application of the natural sciences (where you develop quantitative measurements of things) does not extend to the sorts of things you might explore in Ethics (charity, goodness, evil, and so on).

DEEPER ANALYSIS

- You will see that this idea that different AOKs are distinct in their application is often a contentious claim. Many people might argue, for example, that the natural or human sciences are the best way to explore moral behaviour. In other words, rightness or wrongness in our behaviour is measureable, sometimes by measuring things such as a person's qualitative claims of happiness or pain, or the degree of something called 'flourishing' or the relative outcomes of other measurable elements of human experience.
- But the knowledge question arises: *How reliable are such measurements?*

Not all subjects, therefore, are intended to do the same sort of thing or answer the same sorts of questions, and recognising this is a huge step when it comes to comparing how reliable sources of knowledge are.

For example, if I was interested in exactly how the Large Hadron Collider works and what it was meant to achieve, I would probably not ask my PE teacher (unless they were also the physics teacher). At the same time, however, if I was having trouble with shin splints, or wondering about how to optimise my training routine, I would not ask my physics teacher. This is not to suggest that the individual teachers don't have a wide-ranging expertise or knowledge base; it is only to say that the discipline of physics or sports sciences (though both within the realm of science) are simply exploring different sorts of questions and authorities in those subjects might not have the expertise for answering questions in each other's subject. This is just to say that the 'scope' and 'application' of the AOK are quite different.

An illustration of an interesting discussion of these concepts is Stephen Jay Gould's notion of 'Nonoverlapping Magisteria' or NOMA. In a 1997 article called (appropriately) *Nonoverlapping Magisteria*, Gould, a Harvard professor of Biology and member of the National Academy of Sciences, addresses the question of the scope and application of science and religion, arguing that they are indeed not in conflict, precisely because they each are out to construct quite different types of knowledge. If they were trying to do the same thing they would be in conflict, but because they ask and answer different types of questions, they are not in conflict.



Stephen Jay Gould

He says:

The lack of conflict between science and religion arises from a lack of overlap between their respective domains of professional expertise – science in the empirical constitution of the universe, and religion in the search for proper ethical values and the spiritual meaning of our lives.

In other words, the ‘respective domains’ or what the knowledge framework would call the ‘scope and application’ of science and religion are quite different.

The word *magisteria* comes from the Latin *magister*, meaning ‘to teach’, and the suggestion is that science and religion have the authority to teach us different things about our experience in the world: science can teach us the answers to questions of empirical facts and theories about why these observable facts are the way they are; and religion offers answers when we ask about moral meaning and value. As Gould puts it, scientists ‘study how the heavens go, and [theologians] determine how to go to heaven’.

DEEPER ANALYSIS

Not all scientists or theologians would agree with Gould; religious knowledge systems often do make empirical claims about the world and the things within it. Likewise, the human and natural sciences do make more and more claims about the natural basis of meaning and value in human life. But Gould’s point is important to keep in mind. In trying to answer questions about how the world works, scientific inquiry follows a method rooted in observation (an overlap with another element of the knowledge framework). Too often, religious thinkers side-step this necessary element in the construction of scientific knowledge and attempt to justify claims about the observable world through reference to unverifiable or unfalsifiable claims made in sacred texts or based on personal revelation.

In other words, looking to the Bible for scientific knowledge is not *doing science* in any traditional sense. Thinking about the scope and application of natural science and religious knowledge systems gives you the opportunity to compare the two and suggests that when doing science or history, one cannot appeal to an ancient text as part of that ‘scientific’ or ‘historical’ process.

Similarly, but conversely, suggesting that religious claims are little more than poor attempts at finding scientific truth (as the ‘New Atheists’ are prone to do) ignores the far wider scope and application of religious knowledge systems, which includes the seeking of meaning and significance of living a human life. Characterising all religious belief as bad science, then dismissing it for being bad science is certainly a **straw man fallacy**, and is to wilfully misread the scope and application of what religious knowledge systems are generally trying to do.

When thinking about what the scope and applications of an AOK are, you should ask questions such as the following:

- What is this AOK trying to do?
- What problem(s) is this AOK best suited to respond to?
- In what contexts does it make sense to apply this AOK?
- How do these questions associated with one AOK compare with other AOKs?

A useful metaphor to describe the notion of the differences between the scope and applications of AOKs would be the differences between different types of maps. The TOK Subject Guide, in fact, makes heavy use of this metaphor. Some maps, for example, include nothing but physical geography and some include only borders, roads and cities. In other words, they are trying to answer different questions: 'What does the world physically look like?' on one hand, and 'What and where are the places that humans have created?' on the other. Think of when you switch between views on online maps. Sometimes you want to see only streets, sometimes the 'Earth' view, and sometimes even the street view, depending on what you want to know. Similarly, it makes sense to use a different sort of knowledge depending on what you want to know.

DEEPER ANALYSIS

In addition to clear distinctions, there are undoubtedly important overlaps when considering various AOKs. In relation to their scope and exploring the scope or applications of one or another AOK is not to suggest that they should be separate, it only means to consider them separately. This means that in a complex and ever-changing world, it does make sense to use a number of AOKs to understand how we construct knowledge. We might, for example, temper our search for scientific knowledge with ethical beliefs about the value of life, or we might try to apply our current biological and physical knowledge to historical accounts of events in the past.

Even though the disciplines we study in school and university are indeed distinct in terms of how the courses are run, it takes no time at all to recognise that constructing knowledge within any AOK requires knowledge from other AOKs as well. Don't forget this exploration of similarities when developing presentations or responses to the prescribed titles.

TOK TRAP

Many students completely ignore the differences in scope and application when writing or presenting, most often when discussing ethics and religious knowledge systems. Religious knowledge is too often simply thought of as synonymous with ethical knowledge. The fallacious argument runs something like this: religion just gives us rules on how to behave, ethics gives us rules on how to behave, therefore religious knowledge and ethical knowledge are the same thing. Don't think like this!

Taken at this level there are similarities between the two, but the more sophisticated student will recognise

that the normative rules and claims (claims about what is the right thing to do: such as, 'don't steal') that religions and ethical systems say we should follow are an outcome of quite different processes, theories and systems of beliefs. And the successful TOK student will be exploring these processes and theories, not just focusing on the outcomes. The thinking and the theoretical background that go into developing the rules are importantly different, depending on the AOK. Don't simply assume that religion is just ethics. You can argue for it, if you like, but you must offer an argument; don't assume it from the start.

TASK

- 2 Consider the list of first-order knowledge questions back on page 6. Identify the features of the question that make one AOK more appropriate than other. Pay attention to those questions where you think another AOK might be necessary to answer the question. These instances of overlapping AOKs are sometimes the most interesting. Share these thoughts with a partner or in a class exercise.

■ Concepts and language

Another way to explore the differences and similarities between AOKs is by examining the particular use of certain concepts and language within the AOK. 'The Concepts and Language' element of the knowledge framework gives you the space in which to consider the different concepts important in the AOK and explore how the use of language influences the creation of knowledge in the AOK.

■ Common words and concepts might have different meanings in different AOKs

Perhaps the most useful aspect of this element of the knowledge framework is that it reminds TOK students that words relating to knowledge might have quite different (though related) meanings in different AOKs. For example, be careful when responding to a prescribed title with the word 'truth' in the title; far too often, the word truth is treated as if it means precisely the same thing in different AOK contexts. Generally, some understanding of 'truth' having to do with 'absolute truth' or 'objective truth' is assumed to be what the scientific method and mathematics are seeking to achieve, then the other AOKs are shown to be inadequate when it comes to discovering this sort of truth.

TOK TRAP

- Never assume that words and concepts mean the same thing in different AOKs.
- Concepts like *truth*, *justified*, *reliable*, *belief*, *theory*, *law* all might have slightly different meanings in different AOKs.

A careful student of TOK will recognise that what constitutes a 'true' statement is quite different in the context of different AOKs.

'Truth', if it means anything in science, must mean that a claim is 'tentatively' true; given that the scientific method is based on induction, then scientific claims and hypotheses must be at best approximations or descriptions of what has not yet been shown to be false.

'True' in mathematics, however, might have a far stronger sense of being deductively valid given a set of premises or axioms. We do not have to wonder whether the next triangle will have an area which is half of the product of the length multiplied by the height. Mathematics 'proves' (another concept to be wary of) it. But the inductive methods of science mean that any claim which we 'might' claim is true, is true in the sense that it has yet to be demonstrated to be false.

In the natural sciences, the best of these tentative, but extremely well justified claims earn the title 'theory', which is an honour indeed. When people say the theory of evolution by natural selection is 'just a theory', they do not realise that 'theory' in the sciences means that there is virtually no reliable evidence that the claims are somehow mistaken. It certainly does not mean how we commonly use it, for example, 'an educated best guess, but nevertheless speculative and in need of more evidence', as in the theory that early humans crossed a land bridge over what is now the Bering Strait and entered North America. There is a competing theory that suggests the first humans in the Americas arrived by sea from the South Pacific Islands. These historical claims are called 'theories', in that they do account for a fair bit of the evidence, but there has yet to be definitive observable data which settles the issue.

'Theory' might also mean some general claims or set of claims which allow us to understand some set of evidence, but for which there may be no definitive 'right' way; various economic or ethical or historical theories might fall into this category. Utilitarianism, for example, is a theory that suggests our ethical intuitions can be accounted for and described through a set of beliefs about the nature of pain and pleasure and the amount of each.

But back to 'truth'. Even if students do avoid the trap of assuming 'truth' in science means 'objective truth about the way the world really is', and allow a sort of tentative 'truth' in terms of 'confirmed but not falsified', they will sometimes shift to another AOK and claim that 'this sort of truth' cannot be obtained in the AOK, so claims within that AOK cannot be true.

This often happens when comparing history and science; because historical claims cannot have the same sort of repeatable, predictive and observable claims as science, then history is a poorer cousin of science and can never be 'true'. But assuming one model of 'truth' and suggesting no others can mean it both disregards implications of the differences in the scope and methods between history and science and makes it difficult for the student to develop an interesting analysis of what 'truth' actually will mean in history. 'Truth' is still a valuable concept in history, but the differences need to be appreciated and explored.

Therefore, when exploring certain concepts important in all the AOKs, concepts such as truth, justification, evidence, reasonable, certain and so on, do remember that just because the concept means one thing in one area, it might not mean the same thing in another.

DEEPER ANALYSIS

There is no doubt that language is essential to the passing on or 'communication' of knowledge in all AOKs. In TOK, however, students should push themselves into exploring a deeper analysis of what impact language has on knowledge.

More than just verbalising ideas, the 'choice' and the 'use' of language might impact, colour or shape the knowledge. The classic example (and thus one you shouldn't use) is the difference between 'terrorist' and 'freedom fighter'. In the abortion debate, you can sometimes tell what side of the line the speaker stands on by whether they use 'unborn child' or 'foetus'.

The choice of words might also influence what constitutes knowledge (scope and applications) and how that knowledge is created (methodology). When thinking of language as a WOK or thinking about the concepts and language used in an AOK, do not think of language as simply 'words'.

TASK

- 3 a What does 'truth' mean relative to different AOKs? Identify a number of claims within an AOK which you think are good candidates for truth and explore what 'true' means for them in the context of that AOK.
- b Here are some claims which are good candidates for truth in various AOKs as a starting point. What others would you nominate?
- *'It is wrong to torture mentally handicapped infants for your own enjoyment.'* (ethics)
 - *'Parallel lines will never meet.'* (geometry / maths)
 - *'Sting's cover of Jimmy Hendrix's "Little Wing" is a better song than Justin Bieber's "Baby".'* (the arts)
 - *'No government has the absolute right to rule without the people's consent.'* (politics)
 - *'People are sometimes motivated by the need of others, not by benefits to themselves.'* (psychology)
- c In your analysis of the claims in part b, what can you learn about the scope and applications or the methodology of those AOKs?

Another use of the concepts and language element of the knowledge framework is as a tool to explore what concepts are required for a thorough understanding of that AOK and how the understanding of the particular use of those concepts is required to genuinely understand that AOK.

In religious knowledge systems, for example, one might argue that without a genuine understanding of, and fluent use of, certain concepts, one cannot genuinely understand a religion. Concepts such as faith, revelation, scripture, God, divine mystery, analogy and metaphor are all crucial to at least understanding (not accepting) of how religious knowledge systems construct their understanding of the world. Not being sensitive to the ways in which those concepts function within religious belief makes it impossible to understand religious knowledge. I know from experience, for example, that this point about how crucial the understanding of the central concepts is when considering the advanced field of knowledge called psycholinguistics: without concepts such as 'lexical access', 'anaphor resolution', 'commissurotomy' or 'decentration', I cannot really understand the field, or participate in it as a knower. In order to earn the 'right' to participate in such a field, I would need a lot of training and experience.

■ BUILDING KNOWLEDGE QUESTIONS

- How do professionals decide on which concepts are essential in an AOK?
- How does being an expert in a field relate to having an understanding of essential concepts and language?

If training is needed to learn these concepts, then might it also be true that I might need a certain level of education and understanding before I participate in constructing knowledge of other AOKs? Were I to start spouting off today about psycholinguistics, you could legitimately ignore me and tell me to let the experts do their work. But some of us have an intuition that in other fields, such as the arts or ethics, any one of us, adequately trained or not, can wade into the discussion and say all sorts of things that others should listen to and respect. But why should this be? If being an authority (through education and experience) in psycholinguistics qualifies me to be taken seriously in the field, why doesn't education and experience pay a similar role in artistic claims, such as: 'Sting's version of "Little Wing" is just better than Bieber's "Baby"'; or ethical claims, such as: 'judging others on irrelevant racial facts is wrong'.

IN PRACTICE

This line of exploration then opens up another implication of the role of concepts and language, namely the role of education or training in constraining knowledge. One exercise I use with my students is to take any one of their IB subject's Subject Guides and identify the concepts and language that the IB has decided to include in the curriculum. Why are these concepts crucial to understanding the field? What other concepts are important in the field, or what other ways can they be presented?

You might, for example, wonder why war is a concept so central to the History Guide or why medicine, wealth and the environment are so central to the ethics option in the IB Philosophy Guide. You might even go so far as to question why an exploration of how knowledge is constructed (i.e. the TOK course) is so central to the IB Diploma as a whole. Why these concepts and not others?

TASK

- 4 Take the list of prescribed titles you are considering. Identify the key terms and concepts in the titles and develop a mind-map where you explore what those concepts mean in different AOKs. You can use a dictionary, but often they won't link a concept to a particular discipline, so try to think about that word in the context of other AOKs.

■ Methodology

I have heard it said that the whole TOK course could focus only on questions about the methodology of various AOKs, so important and useful is the concept in the analysis of how we know what we claim to know.

Indeed, one of the best ways to distinguish one AOK from another (or compare one AOK with another) is by exploring how each constructs knowledge claims within its scope – what the general approaches are that the various AOKs follow when creating reliable claims within that field. In other words, how do people construct knowledge in this AOK?

You might think of 'methodology' as something like a job description – if you want to work as an historian, for example, what sort of rules should you follow? What do you have to be doing? As an economist, if you want to explore how we decide whether we should tweak the interest rates, then what theories do you listen to, what sort of evidence is relevant? As a lawyer or ethicist, when it comes to working out whether the government has a right to unlock your mobile phone, what ethical concepts should we appeal to? Even within single AOKs, there might be different schools of thought to each of these questions, so rather than a single methodology in an AOK you might be dealing with several.

TASK

- 5 Consider the examples above. How many different approaches can you think of to answer those questions? Are some better than others? Which of them would result in a reliable or a justified conclusion?

Since the Enlightenment, the creation of almost all knowledge has placed a high priority on observation in the construction of knowledge. The Enlightenment saw the birth of the natural sciences as we know them, based on observation, hypothesis and ultimately experiment.

Prior to this shift, appeal to established authorities (religious, philosophical and political) was a major element in constructing knowledge or what was 'true'. The Enlightenment saw the rise of technology which created the opportunity to develop new observations and much of this knowledge, demonstrable through empirical experiment, was shown to be far more reliable for certain types of questions than previously held beliefs developed in different ways. Because of the success of the observational sciences on certain types of questions, observations have come to be often prioritised as the only or most reliable of methods to gain knowledge in all AOKs. 'Seeing is believing' after all.

Again, however, the fact that this is undoubtedly true within the scope of some AOKs does not necessarily entail that this is the case in others. During the 1930s and 40s, for instance, a group of philosophers called the Logical Positivists, who were thinking about ethical claims, suggested that statements could only be meaningful if they could be scientifically verified. They then decided that because ethical claims are not based on observation (for example: What does the 'rightness' of charity 'look' like? Can you set up a tool to measure it?), or because there were no scientific empirical tests to determine the truth or falsity of claims such as, 'Capital punishment is wrong', this meant that these claims literally have no meaning. The methods of science, therefore, were assumed to be the only method to create any knowledge, regardless of the type of question being asked. It is argued that the Logical Positivists mistakenly tried to apply one method of constructing knowledge onto a different type of knowledge. They used the wrong map to find their way through the territory of another land.

Very often questions of methodology are closely related to other key issues in TOK: questions such as, 'What makes knowledge in this AOK reliable?', 'How do people justify claims within these AOKs?' or 'What counts as evidence in this AOK?' They are related because if you don't follow the right methods in an AOK, then the resulting claims are not said to be well justified in the context of that AOK.

Very often the scope and applications of AOKs can be said to have their roots in the different methodologies within the AOK. Taking the example above, for the Logical Positivists, no claim could be justified unless some empirical observation could show it to be true. The only 'evidence' allowed in a discussion for the Logical Positivists would have been evidence that could be seen and touched and tested.

A good example of an exploration of the methodology of an AOK (natural sciences) can be found in Richard Dawkins' 'Good and Bad Reasons for Believing'. In the essay, pitched as if it were a genuine letter to his daughter, Dawkins outlines some basic rules as to how a scientist ought to create knowledge. His ideas have relevance to both the natural sciences and human sciences, though the method might have to be applied in different ways. Read the letter below.

To my dearest daughter,

Now that you are ten, I want to write to you about something that is important to me. Have you ever wondered how we know the things that we know? How do we know, for instance, that the stars, which look like tiny pinpricks in the sky, are really huge balls of fire like the Sun and very far away? And how do we know that the Earth is a smaller ball whirling round one of those stars, the Sun?

The answer to these questions is 'evidence'.

Sometimes evidence means actually seeing (or hearing, feeling, smelling...) that something is true. Astronauts have travelled far enough from the Earth to see with their own eyes that it is round. Sometimes our eyes need help. The 'evening star' looks like a bright twinkle in the sky but with a telescope you can see that it is a beautiful ball – the planet we call Venus. Something that you learn by direct seeing (or hearing or feeling...) is called an observation.

Often evidence isn't just observation on its own, but observation always lies at the back of it. If there's been a murder, often nobody (except the murderer and the dead person!) actually observed it. But detectives can gather together lots of other observations which may all point towards a particular suspect. If a person's fingerprints match those found on a dagger, this is evidence that he touched it. It doesn't prove that he did the murder, but it can help when it's joined up with lots of other evidence. Sometimes a detective can think about a whole lot of observations and suddenly realise that they all fall into place and make sense if so-and-so did the murder.

Scientists – the specialists in discovering what is true about the world and the universe – often work like detectives. They make a guess (called a hypothesis) about what might be true. They then say to themselves: if that were really true, we ought to see so-and-so. This is called a prediction. For example, if the world is really round, we can predict that a traveller, going on and on in the same direction, should eventually find himself back where he started. When a doctor says that you have measles he doesn't take one look at you and see measles. His first look gives him a hypothesis that you may have measles. Then he says to himself: if she really has measles, I ought to see... Then he runs through his list of predictions and tests them with his eyes (have you got spots?), his hands (is your forehead hot?), and his ears (does your chest wheeze in a measly way?). Only then does he make his decision and say, 'I diagnose that the child has measles.' Sometimes doctors need to do other tests like blood tests or X-rays, which help their eyes, hands and ears to make observations.

The way scientists use evidence to learn about the world is much cleverer and more complicated than I can say in a short letter. But now I want to move on from evidence, which is a good reason for believing something, and warn you against three bad reasons for believing anything. They are called 'tradition', 'authority', and 'revelation'.

First, tradition. A few months ago, I went on television to have a discussion with about 50 children. These children were invited because they'd been brought up in lots of different religions. Some had been brought up as Christians, others as Jews, Muslims, Hindus, Sikhs. The man with the microphone went from child to child, asking them what they believed. What they said shows up exactly what I mean by 'tradition'. Their beliefs turned out to have no connection with evidence. They just trotted out the beliefs of their parents and grandparents, which, in turn, were not based upon evidence either. They said things like, 'We Hindus believe so and so.' 'We Muslims believe such and such.' 'We Christians believe something else.' Of course, since they all believed different things, they couldn't all be right. The man with the microphone seemed to think this quite proper, and he didn't even try to get them to argue out their differences with each other. But that isn't the point I want to make. I simply want to ask where their beliefs came from. They came from tradition. Tradition means beliefs handed down from grandparent to parent to child, and so on. Or from books handed down through the centuries. Traditional beliefs often start from almost nothing; perhaps somebody just makes them up originally, like the stories about Thor and Zeus. But after they've been handed down over some centuries, the mere fact that they are so old makes them seem special. People believe things simply because people have believed the same thing over centuries. That's tradition.

The trouble with tradition is that, no matter how long ago a story was made up, it is still exactly as true or untrue as the original story was. If you make up a story that isn't true, handing it down over any number of centuries doesn't make it any truer!

Most people in England have been baptised into the Church of England, but this is only one of many branches of the Christian religion. There are other branches such as the Russian Orthodox, the Roman Catholic and the Methodist churches. They all believe different things. The Jewish religion and the Muslim religion are a bit more different still; and there are different kinds of Jews and of Muslims. People who believe even slightly different things from each other often go to war over their disagreements. So you might think that they must have some pretty good reasons – evidence – for believing what they believe. But actually their different beliefs are entirely due to different traditions.

Let's talk about one particular tradition. Roman Catholics believe that Mary, the mother of Jesus, was so special that she didn't die but was lifted bodily into Heaven. Other Christian traditions disagree, saying that Mary did die like anybody else. These other religions don't talk about her much and, unlike Roman Catholics, they don't call her the 'Queen of Heaven'. The tradition that Mary's body was lifted into Heaven is not a very old one. The Bible says nothing about how or when she died; in fact the poor woman is scarcely mentioned in the Bible at all. The belief that her body was lifted into Heaven wasn't invented until about six centuries after Jesus's time. At first it was just made up, in the same way as any story like Snow White was made up. But, over the centuries, it grew into a tradition and people started to take it seriously simply because the story had been handed down over so many generations. The older the tradition became, the more people took it seriously. It finally was written down as an official Roman Catholic belief only very recently, in 1950. But the story was no more true in 1950 than it was when it was first invented 600 years after Mary's death.

I'll come back to tradition at the end of my letter, and look at it in another way. But first I must deal with the two other bad reasons for believing in anything: authority and revelation.

Authority, as a reason for believing something, means believing it because you are told to believe it by somebody important. In the Roman Catholic Church, the Pope is the most important person, and people believe he must be right just because he is the Pope. In one branch of the Muslim religion, the important people are old men with beards called Ayatollahs. Lots of young Muslims are prepared to commit murder, purely because the Ayatollahs in a faraway country tell them to.

When I say that it was only in 1950 that Roman Catholics were finally told that they had to believe that Mary's body shot off to Heaven, what I mean is that in 1950 the Pope told people that they had to believe it. That was it. The Pope said it was true, so it had to be true! Now, probably some of the things that Pope said in his life were true and some were not true. There is no good reason why, just because he was the Pope, you should believe everything he said, any more than you believe everything that lots of other people say. The present Pope has ordered his followers not to limit the number of babies they have. If people follow his authority as slavishly as he would wish, the results could be terrible famines, diseases and wars, caused by overcrowding.

Of course, even in science, sometimes we haven't seen the evidence ourselves and we have to take somebody else's word for it. I haven't with my own eyes seen the evidence that light travels at a speed of 186,000 miles per second. Instead, I believe books that tell me the speed of light. This looks like 'authority'. But actually it is much better than authority because the people who wrote the books have seen the evidence and anyone is free to look carefully at the evidence whenever they want. That is very comforting. But not even the priests claim that there is any evidence for their story about Mary's body zooming off to Heaven.

The third kind of bad reason for believing anything is called 'revelation'. If you had asked the Pope in 1950 how he knew that Mary's body disappeared into Heaven, he would probably have said that it had been 'revealed' to him. He shut himself in his room and prayed for guidance. He thought and thought, all by himself, and he became more and more sure inside himself. When religious people just have a feeling inside themselves that something must be true, even though there is no evidence that it is true, they call their feeling 'revelation'. It isn't only popes who claim to have revelations. Lots of religious people do. It is one of their main reasons for believing the things that they do believe. But is it a good reason?

Suppose I told you that your dog was dead. You'd be very upset, and you'd probably say, 'Are you sure? How do you know? How did it happen?' Now suppose I answered: 'I don't actually know that Pepe is dead. I have no evidence. I just have this funny feeling deep inside me that he is dead.' You'd be pretty cross with me for scaring you, because you'd know that an inside 'feeling' on its own is not a good reason for believing that a whippet is dead. You need evidence. We all have inside feelings from time to time, and sometimes they turn out to be right and sometimes they don't. Anyway, different people have opposite feelings, so how are we to decide whose feeling is right? The only way to be sure that a dog is dead is to see him dead, or hear that his heart has stopped; or be told by somebody who has seen or heard some real evidence that he is dead.

People sometimes say that you must believe in feelings deep inside, otherwise you'd never be confident of things like 'My wife loves me'.

But this is a bad argument. There can be plenty of evidence that somebody loves you. All through the day when you are with somebody who loves you, you see and hear lots of little tidbits of evidence, and they all add up. It isn't purely inside feeling, like the feeling that priests call revelation. There are outside things to back up the inside feeling: looks in the eye, tender notes in the voice, little favours and kindnesses; this is all real evidence.

Sometimes people have a strong inside feeling that somebody loves them when it is not based upon any evidence, and then they are likely to be completely wrong. There are people with a strong inside feeling that a famous film star loves them, when really the film star hasn't even met them. People like that are ill in their minds. Inside feelings must be backed up by evidence, otherwise you just can't trust them.

Inside feelings are valuable in science too, but only for giving you ideas that you later test by looking for evidence. A scientist can have a 'hunch' about an idea that just 'feels' right. In itself, this is not a good reason for believing something. But it can be a good reason for spending some time doing a particular experiment, or looking in a particular way for evidence. Scientists use inside feelings all the time to get ideas. But they are not worth anything until they are supported by evidence.

I promised that I'd come back to tradition, and look at it in another way. I want to try to explain why tradition is so important to us. All animals are built (by the process called evolution) to survive in the normal place in which their kind live. Lions are built to be good at surviving on the plains of Africa. Crayfish are built to be good at surviving in fresh water, while lobsters are built to be good at surviving in the salt sea. People are animals too, and we are built to be good at surviving in a world full of ... other people. Most of us don't hunt for our own food like lions or lobsters, we buy it from other people who have bought it from yet other people. We 'swim' through a 'sea of people'. Just as a fish needs gills to survive in water, people need brains that make them able to deal with other people. Just as the sea is full of salt water, the sea of people is full of difficult things to learn. Like language.

You speak English but your friend speaks German. You each speak the language that fits you to 'swim about' in your own separate 'people sea'. Language is passed down by tradition. There is no other way. In England, Pepe is a dog. In Germany he is ein Hund. Neither of these words is more correct, or more truer than the other. Both are simply handed down. In order to be good at 'swimming about in their people sea', children have to learn the language of their own country, and lots of other things about their own people; and this means that they have to absorb, like blotting paper, an enormous amount of traditional information. (Remember that traditional information just means things that are handed down from grandparents to parents to children.) The child's brain has to be a sucker for traditional information. And the child can't be expected to sort out good and useful traditional information, like the words of a language, from bad or silly traditional information, like believing in witches and devils and ever-living virgins.

It's a pity, but it can't help being the case, that because children have to be suckers for traditional information, they are likely to believe anything the grown-ups tell them, whether true or false, right or wrong. Lots of what grown-ups tell them is true and based on evidence or at least sensible. But if some of it is false, silly or even wicked, there is nothing to stop the children believing that too. Now, when the children grow up, what do they do? Well, of course, they tell it to the next generation of children. So, once something gets itself strongly believed – even if it's completely untrue and there never was any reason to believe it in the first place – it can go on forever. Could this be what happened with religions? Belief that there is a god or gods, belief in Heaven, belief that Mary never died, belief that Jesus never had a human father, belief that prayers are answered, belief that wine turns into blood – not one of these beliefs is backed up by any good evidence. Yet millions of people believe them. Perhaps this is because they were told to believe them when they were young enough to believe anything.

Millions of other people believe quite different things, because they were told different things when they were children. Muslim children are told different things from Christian children, and both grow up utterly convinced that they are right and the others are wrong. Even within Christians, Roman Catholics believe different things from Church of England people or Episcopalians, Shakers or Quakers, Mormons or Holy Rollers, and all are

utterly convinced that they are right and the others are wrong. They believe different things for exactly the same kind of reason as you speak English and someone speaks German.

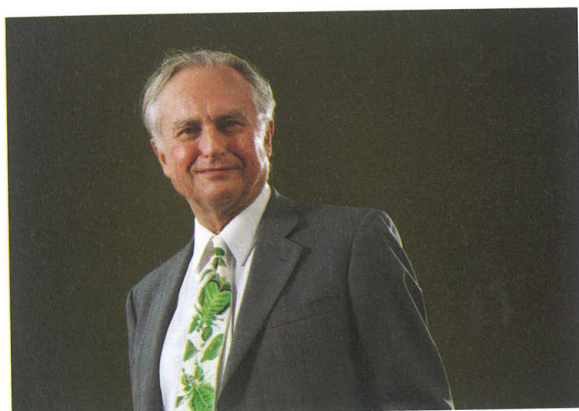
Both languages are, in their own country, the right language to speak. But it can't be true that different religions are right in their own countries, because different religions claim that opposite things are true. Mary can't be alive in the Catholic Republic but dead in Protestant Northern Ireland.

What can we do about all this? It is not easy for you to do anything, because you are only ten. But you could try this. Next time somebody tells you something that sounds important, think to yourself: 'Is this the kind of thing that people probably know because of evidence? Or is it the kind of thing that people only believe because of tradition, authority or revelation?' And, next time somebody tells you that something is true, why not say to them: 'What kind of evidence is there for that?' And if they can't give you a good answer, I hope you'll think very carefully before you believe a word they say.

Your loving,

Daddy

Source: 'Good and Bad Reasons for Believing' by Richard Dawkins, taken from *How Things Are: Science Tool-Kit For The Mind* by John Brockman and Katinka Matson



Richard Dawkins

TASK

- 6 Read Richard Dawkins' 'Good and Bad Reasons for Believing'. Using your ideas about the scope and applications of the human sciences, explore how the *methods* might be different between the human and natural sciences.

Dawkins initially identifies evidence based on 'observation' as the basis upon which all reliable scientific knowledge must be founded. He does not make the same mistake the Logical Positivists do, as he clearly points out that he is talking about

how the sciences work, not necessarily any other AOK. He also points out that we need not necessarily observe everything for ourselves, but that whatever we do accept as scientists, there must be some observation at the root of it, which has been seen, or could be seen by someone.

So just because you have not performed all the experiments mentioned in your science textbooks, you can still reliably accept them because those facts in the textbook are themselves, at some point in the past, based on direct observation. (This raises an interesting appeal to trust or 'faith' as a way of knowing, in addition to sense perception.)

BUILDING KNOWLEDGE QUESTIONS

- In what ways, and to what effect, do we employ *faith* when accepting the claims of scientists?
- What would make our *faith* *justified* in this case?

In the letter, Dawkins outlines three things that the method used by a scientist must not include when creating reliable scientific knowledge.

First, **tradition**, or believing something to be true simply because you belong to a group that believes it, does not make that belief any truer. Passing a false belief down from generation to generation does not somehow make that belief any more true, therefore appealing to 'just the way it's always been' is not part of the method of the sciences. Rather the inverse is true: scientists do things or 'know' things not because they were passed down, but they are passed down because they are rooted in evidence and observation.

Second, believing a claim simply because someone **in authority** tells you to believe it is another method which should be avoided. The idea here is that the simple fact that someone (for example, a teacher, a religious leader, a boss) has authority over you or who is in authority (has a particular status higher than you) does not necessarily make that person a reliable source of knowledge. Their job does not necessarily mean that what they say is reliable. Having that status does not magically make them a reliable source of knowledge.

DEEPER ANALYSIS

There is, however, another sense of authority that would help a scientist develop credible knowledge, one that Dawkins does not explicitly address.

Suppose someone was 'in' authority (had a certain job, such as a teacher) but the *reason* the person was in authority was because that person was *qualified* to be in that role. They are, in other words, 'an' authority in a particular subject and thus qualified to pass down reliable knowledge to you. Dawkins' point is just this: having a certain job (being in authority) does not necessarily mean you are a reliable source of knowledge.

We can all think of examples when someone has a job that perhaps they should not. But being qualified enough to hold a position might actually make you a reliable source of knowledge. In other words, the work your science teacher has put into learning the science is what makes them *qualified* to be your teacher *and* to be an authority on the subject. So 'authority', despite Dawkins' unsubtle way of expressing it, might be a good avenue towards knowledge; it just has to be the right sort of authority.

A connection to the scope and applications element of the knowledge framework can be made here. Just because you are an authority in one field does not, of course, qualify you as an authority in another. This, I think, is Dawkins' central point: just because a religious leader is an authority on religious matters, the scope of religious knowledge systems should not (in his view) extend into questions which are in the realm of science.

Finally, Dawkins argues that 'revelation' should not be used as part of the method of creating scientific knowledge. He defines 'revelation' loosely as an internal feeling that something is true. In the religious sense it would be some knowledge about something given to a person from God, through perhaps a prophecy or vision. Instead, Dawkins argues, all scientific knowledge must have its roots in publicly observable evidence. Internal feelings might have some role to play as hunches or intuitions, but for these to be reliable they must be tested and observed to be true.

■ BUILDING KNOWLEDGE QUESTIONS

- What is the role of personal intuition in the development of scientific knowledge?
- How does the *shared community* of the sciences manage the knowledge of *individuals*?

In summary, in his letter Dawkins explores the correct ways (the methods) in which scientific claims are justified, namely through appeal to observable events in the world. It's no use who tells you, how many people have believed it in the past or whether someone has a 'hunch' or 'intuition' that something is true, if there is no observable event which can be appealed to as the 'source' of that knowledge, then it is not 'reliable'.

DEEPER ANALYSIS

While Dawkins is clearly only talking about the methods appropriate to constructing scientific knowledge, he does appeal to ideas which will have wide ranging implications in other AOKs.

TASK

7 What do you think those implications might be?

Do some wider research on Professor Dawkins. Do your thoughts about those implications match what you have learned about him?

TASK

8 While Dawkins' letter is not a comprehensive explanation of how scientific knowledge should be constructed, he does prioritise observation. What do you think about this claim? Is it possible to observe the world without also observing it *from a perspective*? In what ways does Dawkins' own perspective shape what he thinks *can* count as knowledge?

DEEPER ANALYSIS

This appeal to observation might not fit well when considering the methodology of knowledge construction in other AOKs, however. Even in physics, for example, the role of mathematics in testing and justifying knowledge seems to push observation slightly to the side in favour of mathematical consistency; often in the historical development of physics, the mathematical models have suggested that something is true but there has not been empirical evidence to demonstrate it. The recent discovery of gravitational waves is a good example: in 1916 Einstein's mathematical calculations said they must exist but it was not until 2016 that they were accepted as true because of observational evidence.

String theory is another example of a description that is believed to be plausible, but only on the strength of mathematics, not through direct observation. Even string theory gives rise to M-theory, an idea implied by the mathematical requirements of string theory. Neither of these is observable, but the scope of physics is wide enough to accept certain ideas as 'reliable' even when they are beyond empirical observation.

The knowledge frameworks need not be used only to demonstrate differences between AOKs, however. It is possible to use them to explore unexpected similarities between AOKs and through those similarities, students have the tools to identify more precisely where differences actually are.

For example, natural sciences and ethics are often pitched as if they were opposites in all sorts of ways: one is rational while one is emotional; one is objective while one is subjective; one seeks to find truth while the other is only exploring matters of taste. I am sure that none of these is true, but there is one specific similarity between them that is to do with a question under the 'methodology' aspect of the knowledge framework which is worth discussing.

All TOK students come across the 'scientific method' at some point and learn that it is a description of a general scientific process of knowledge creation which incorporates observation, hypothesis and experimentation. Is there a similar method of constructing ethical knowledge? Can there be experimentation in Ethics (of the sort that won't land you in prison)?

The 'trolley problem' (originally posed by Philippa Foot in 1967) is as familiar in a TOK classroom as is a discussion of the scientific method. In my experience, this trolley problem with all of its various permutations and alterations acts a bit like a scientific experiment. That is, the experimenter begins with a central question concerning the role of our intuitions about maximising happiness or minimising unhappiness. They then create a scenario where various elements can be isolated so the (thought) experiment can be run again in order to observe any new outcomes.

For example, the original scenario can be altered to isolate our intuitions about actively killing one person with the trolley as the means to save five others, or we may isolate our intuitions, how our physical presence impacts our ethical beliefs, by imagining a scenario where we are operating the trolley via remote control. Each of these alterations is like isolating new variables in a series of experiments: *'What happens when we tweak this element of the experiment? What new ethical intuitions or ideas do we uncover?'*

Once we have uncovered a common ground, we can then comment more interestingly on exactly where they do differ: exactly what is being 'observed' in ethics and science?



The trolley problem – would you kill one person in order to save the lives of five?

Can any of those observations exist without pre-existing theories? How can we find ways to measure the effect of our ethical intuitions? In what ways can we collect objective data regarding people's intuitions? For example, the majority of people are happy to turn the trolley towards the single person, but far fewer are willing to push a bystander from a bridge to effect the same outcome (as examined in a related dilemma).

■ Historical development

The historical development of an AOK refers to the way that certain beliefs change over time, beliefs, for example, about the age of the planet, the nature of physical particles or the value of individual consent in medical ethics. These changes can refer to the change in the content of knowledge claims but really should refer to more fundamental issues having to do with the construction of knowledge within the AOK: the scope and applications or methodology.

You do not want only to claim that changes in knowledge amount to historical development: pointing out, for example, that ideas about the structure of the atom change over time is interesting, but without links to some wider context, pointing this out amounts to nothing more than first-order description in the history of ideas.

DEEPER ANALYSIS

While things that people think are true have changed over time in many AOKs, the more interesting TOK questions have to do with ‘why’ the knowledge changed and what implications those changes have for our understanding of the AOK today. For example, just because how we perceived the structure of the atom underwent a number of changes, what do you think that means for our current scientific knowledge? Is it possible that our fundamental ideas about our world will undergo significant changes? What about the nature of scientific knowledge allows for this possibility?

Yes, we certainly do ‘know’ more than we used to, but the better questions ask about why that knowledge has changed. What has happened for that knowledge to arrive now? Why didn’t we know these things before? Were we working with a mistaken set of beliefs or was the technology not advanced enough? This could, for example, give rise to interesting knowledge questions about the role of technology in the creation of knowledge.

The historical development of knowledge might also refer to the scope and applications of an AOK. For example, how the gradual emergence of what we know of as natural sciences came about from the study of ‘natural philosophy’. Aristotle would have seen no difference between what we call philosophy and what we call science; the focus on the observation of science really came to the forefront during the Enlightenment, in the sixteenth and seventeenth centuries.

Exploring this shift would yield interesting claims about the scope and applications of both philosophy (possibly included in the human sciences and ethics) and the natural sciences in terms of what sorts of questions are being explored and the relevant methodology required in order to answer those types of questions. Today we accept that the natural sciences ask questions about observable phenomena in the world, while philosophy uses observable evidence to explore the meaning and significance of these facts at the conceptual and metaphysical level.



British socialist feminist theorist and writer, Sheila Rowbotham

Another example of how we examine the historical development of a field is within the field of history itself. Sheila Rowbotham's 1973 *Hidden from History* does not necessarily identify a shift in the way history is written but it does draw attention to the extent to which current social values (in this case, the growing feminist movement) drive the development of new historical knowledge.

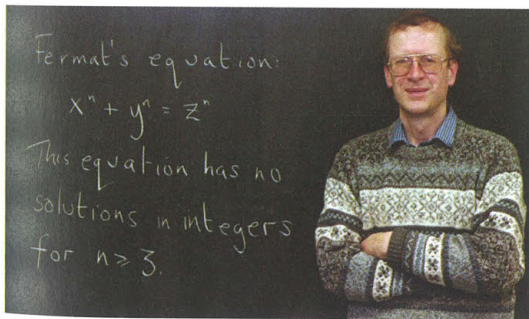
Rowbotham's work highlights the fact that until the mid-twentieth century, professional history was really a story about powerful white men and their behaviour and activity.

Rowbotham rightly queried what was 'missing' from the established 'histories' and clearly stressed the link between current social values and the sort of histories that are written: it was because the feminist movement was gaining traction during the 1960s and 70s that Rowbotham's history was written and these are movements and events squarely grounded in an historical analysis of culture.

Rowbotham's insights about the type of narratives being constructed by her colleagues was echoed by historians like Howard Zinn in his *A People's History of the United States* (1980) and Theodore Allen in his *The Invention of the White Race* (1994). The social upheavals of the mid-twentieth century created a certain sensitivity to minority voices and the historians responded by creating new historical narratives about the role of minorities or their experience throughout history. Whereas in the professional circles of the sciences the number of minority voices began to be heard, the scientific knowledge they produced might not have been remarkably different from what came before because the method of

natural sciences has little to do with the individual doing the science. In history, however, entirely new histories were being constructed based on the choices and experiences of individuals.

The difference here in the historical development of both the sciences and history could be explored through an analysis of the scope and applications of these AOKs: the individual's role in the creation of scientific knowledge is significantly different than in the creation of historical knowledge.



Mathematician, Sir Andrew Wiles

Mathematics resides at the 'objective' end of the spectrum of knowledge (if there is such a spectrum), so one might think that, in mathematics, once true, always true. But even here, we can use the historical development of mathematics to uncover interesting questions about the nature of mathematics.

In May 1995, Andrew Wiles, while at Princeton University, announced that he had 'solved' the famous 400-year-old problem of 'Fermat's Last Theorem'.

In a text from 1637, Pierre Fermat wrote into the margin of a text that he had proven that Pythagoras' Theorem cannot be solved with any whole integer greater than 2, but that the margins of the book were not big enough to write it out. Whether or not Fermat was telling the truth has never been established, but mathematicians have since tried to find a proof, which everyone expected to be slightly too large even for a wide margin. Wiles quietly worked on developing his own approach over the course of seven years until finally he reached a proof.

■ BUILDING KNOWLEDGE QUESTIONS

Watch the BBC documentary on Wiles' discovery.

- **What role does the peer review process play in the construction of knowledge?**
- **What does this suggest about the relationship between personal and shared knowledge in various AOKs?**

What is interesting in terms of the historical development of mathematics, however, is that the proof that Wiles finally developed contained mathematical thinking that would not have been available to Fermat. Wiles' own proof depended on the work of a whole line of great post-Fermat mathematicians. It is simply not possible for Fermat to have used Wiles' proof. Does this mean that knowledge in mathematics is dependent on what sorts of things other mathematicians happen to be working on? A number of ideas here can challenge the stereotype that professional mathematics has nothing to do with emotion, society or chance: that an individual mathematician's proofs depend on what other mathematicians happen to be working on; that seemingly irrelevant work done over the course of generations might, through a particular moment of insight or intuition, be woven together into a general relationship, or that the determination and intuition in the work of particular individuals (and the time and life circumstances affording enough free time) are crucial to the growth of mathematics (and any other AOK for that matter). This places mathematics firmly in a social context which might yield interesting insights extending far beyond the plainly stereotypical view that mathematics is only about deductive reasoning, ' $2 + 2 = 4$ ', or that emotion has nothing to do with the process of doing mathematics.

A common and incredibly useful example of historical development is the **paradigm** shift. Paradigms are sets of beliefs which are used to understand the world around us; they do this by both evolving out of the facts observed in the world but then also to make sense of further facts encountered. They therefore are partly evidence based, but then also prescriptive and it is this second notion that is genuinely interesting.

When one operates within a paradigm one is operating with a set of beliefs that in some sense give you a sort of script which will provide boundaries to further analysis and plausible explanations of the events observed in the world. They therefore not only provide explanatory power, but also direct the types of explanations available.

If my paradigm starts from the position that the Earth is at the centre of the universe, as Ptolemy's did, then every time I look into the night sky I will make sense of what I observe there by appealing to the basic constraints in which the Earth remains at the centre. This is not to say that Ptolemy, or any other holder of a paradigm, was making unjustified assumptions; indeed, Ptolemy's geocentric view of the cosmos where the planets and stars were fixed to great circular orbits, each with the Earth at the centre, was developed based on centuries of observations. Any observation of the lights in the sky, made sense of by the Ptolemaic view, only added to the observational strength of that paradigm. So, it was clearly justified but, more than this, it was also 'reliable' in that it helped make sense of other observations that astronomers had made. Indeed, the Egyptians were perfectly happy and accurate when using the geocentric paradigm to predict and explain solar and lunar eclipses, moon phases and the movements of the

planets, so it is difficult to say that, on the basis of the evidence available to them, these geocentric astronomers were wrong.

In 1962, Thomas Kuhn published *The Structure of Scientific Revolutions* and offered a different way of understanding the way science works (its methodology), placing the concept of paradigm at the fore. He suggested that rather than developing slowly over time, driven by more and better confirmations of theories, scientific development sometimes makes quite drastic shifts or revolutions.

Sometimes, he argued, established scientific explanations are found to be inadequate to make sense easily of new observations. In some cases, new additions to the theories can be developed which both make sense of the theory but also maintain the theory's main starting points. For example, more and more observations of the night sky were showing the geocentric basis of the Ptolemaic vision of the cosmos to be inadequate. Many additions had to be made to Ptolemy's view, including the addition of more and more mini orbits, for the basic premise of Earth's central position to be maintained. Finally, however, the observations become more and more difficult to make sense of in relation to the established paradigm. Kuhn called this the 'crisis phase', the crisis being that the established theory has encountered observations which are unable to be explained by the theory or when additions must be made to theory which are more and more implausible.

Finally, he argued, the paradigm breaks and a 'paradigm shift' will occur. This means that rather than adding elements to the main theory in an *ad hoc* or unjustified way, the main theory crumbles under the weight of new observations and a new one arises. Our understanding of the cosmos, based on a growing body of observations and analysis from people such as Copernicus, Kepler, Brahe and Galileo, required a shift from the basic premise of the Earth being the centre of our universe, to one which posited the Sun to be at the centre. This paradigm shift created a new way to understand our observations, one which was better justified in the sense that it was supported by more observations, but also more reliable in the sense that it was far better at making sense of later observations.

TOK TRAP

Paradigms and paradigm shifts are not an uncommon topic for TOK students, but often the notion of paradigm is mistakenly treated as synonymous for the less precise notion of 'perspective'. Students will then treat 'taking a different perspective' as something akin to a paradigm shift. But one of Kuhn's main points with respect to paradigm shifts is 'incommensurability'. Genuine paradigms are 'incommensurate', meaning they cannot both be true, so when a shift occurs, you can't continue using the old paradigm.

Ptolemy (had he been around) simply could not have justifiably claimed that his view of how our universe worked was just one perspective among many; his was mistaken. Astronomy, physics and the natural

sciences are aiming, not for 'what things look like from your perspective', but what actually is the case, and this is determined by the strength of evidence. The evidence collected meant that the geocentric universe was not a justified view any longer.

You might compare this to different perspectives in psychology or economics, where there is less of an impulse to suggest that there is one fact of the matter. Your choice of a behavioural or cognitive approach in psychology, or a classical or Keynesian approach in economics will have significant impact on the knowledge you construct (a point you might explore in line with the acquisition of knowledge topic from Chapter 1).

IN PRACTICE

This exploration of the notion of paradigm shifts in the history of scientific knowledge uncovers a number of interesting knowledge questions which can be explored in the context of an essay or presentation.

- *What does it take for a set of beliefs in an AOK to become accepted by the shared community?*
- *What role does prediction play in deciding whether or not a theory or paradigm is reliable? Does prediction play the same role in all the sciences?*
- *Under what circumstances can new observations be said to genuinely challenge accepted beliefs? How do the central assumptions and methods in AOKs control what counts as a relevant observation?*
- *How does history or natural sciences (or any other AOK) manage the differences of opinion among authorities in the field?*

TASKS

- 9 Research the historical developments in a number of AOKs. Construct a timeline identifying the developments in *content*, and in *methodology*. Include conceptual and technological advances in the AOK which led to these new methods or ideas being developed.
- 10 Imagine a dialogue between 'experts' in the field before and after a major development. Choose a question in the field and construct a debate between them – are they using the same concepts or methods?

■ Links to personal knowledge

The role of the knower in an AOK's community of knowers is an important element of the course. These links between the shared knowledge of the community of knowers and the personal knowledge of an individual can be explored through the knowledge framework's 'Links to personal knowledge'. The interplay between the two runs both ways. Individuals, their research, their background beliefs and their experiences certainly contribute to the shared knowledge of a community, but at the same time the knowledge produced by the community can affect the individual in a variety of ways.

An examination of these two-way links can best be applied within the context of the other elements of the knowledge framework and can be formulated in compelling knowledge questions:

■ BUILDING KNOWLEDGE QUESTIONS

- **What are the issues facing an individual as he or she engages with the methodology of one AOK or another?**
- **In what ways are an *individual's* beliefs and emotions and intuitions relevant in the construction of knowledge?**
- **How might an individual's social, cultural or intellectual background affect the construction of knowledge in an AOK?**
- **In what ways has an individual's personal knowledge influenced the historical development of the shared knowledge of a community?**

TOK TRAP

In the past, one of the major stumbling blocks for students when thinking about TOK was the application of their own experience as knowers. This element has always been central to the TOK course – what is it like for an individual knower to construct knowledge in the various AOKs?

This has too often, however, resulted in analyses based too much in personal anecdote or that the world of knowledge was really just a bunch of individuals making various claims. Students would often talk about what *they* know as opposed to what a community might know and this would lead to naively relativistic claims along the lines that no individual's knowledge was any better than any other's and in the context of an AOK, this simply is not true. Take my word for it when I say that my knowledge of astrophysics or differential calculus is not as good as professors in those fields.

So, while personal experience as a knower is important, it should not be treated as separate from the context of communities of knowers. Always think along the lines of the following:

- What do scientists know?
- What do mathematicians know?
- How do ethicists construct knowledge?
- What concepts are used by artists to make aesthetic judgements?
- How do historians develop a consensus?

The role of the individual is important in these, but personal anecdotes about what you know or what you learned in your classes should not eclipse the broader discussions about the nature of knowledge in the context of an AOK.

For further discussion of the personal and shared distinction, see Chapter 3, pages 50–1.

To start the discussion, let's break this element down into two broad categories:

- How the personal knowledge of an individual affects the shared knowledge of a community.
- How the shared knowledge of the community can influence the individual.

■ Personal knowledge influencing the shared knowledge of a community

Depending on the AOK, an individual's personal knowledge or personal experience on the development of knowledge in the community can have different effects.

When judging the individual's knowledge in relation to the community, I like to imagine sitting in a lecture theatre where hundreds of students are listening to the most influential and important professor in a field. The professor is expounding on all the major theories, giving justifications for them, explaining their history and looking at the future of the field. Then one student stands and says, 'Yes, that is all well and good, but let me tell you what I think about this.' The key insight comes with the professor's response: will the professor *care* what the student has to say? Does the student's individual knowledge have any genuine relevance and under what circumstances should it?

TASK

- 11 Create a dialogue between a professor in an AOK and a first-year undergraduate student who *disagree* about a knowledge claim within the field. For example, a history professor might be exploring the Turkish Government's attitude to what some call the Armenian Genocide or a mathematics professor might be explaining a complicated proof for some theorem or an English professor might be exploring the work and interpretations of a particular author. If a student stands up and offers a counter-position, how would the two handle this debate? What would the conversation look like? What knowledge questions or what claims about the nature of knowledge in the AOKs arise as a result of this task?

In terms of the scope and application of the AOKs, some will accept the validity of an individual's perspective as more or less legitimate. I might, for example, genuinely disagree with my English professor's interpretation of Bertolt Brecht's plays, and within reason, my own view could be justified with reference to the text. The professor's interpretation would be one among many and while certainly backed with more expertise, experience and knowledge of the field, the professor's views could still accommodate my own personal views. In other words, the scope and application or the nature of artistic knowledge is such that it can accommodate various views, and those views are incorporated into the community's knowledge (provided they can be justified). Similarly, in the arts, my own emotional response to a work of art is genuine evidence in the analysis of that work of art. An individual's emotional response to the imagery, language or themes of a work of art are relevant to the knowledge claims about that art.

The scope and application of history, however, might be less amenable to my individual perspective. I can think what I want, but in history the expectation that an individual's perspective be justified in a public arena is arguably stronger than in the arts. In the natural or human sciences, this expectation is even stronger and includes the need for repeatability and predictive power. Again, I can think whatever I want about the nature of the atom, but my own views are utterly irrelevant unless they can be shown to be more than just an individual view; it must be genuinely observable in the world and built on methods which are shared by the knowledge community.

In other words, the methodologies of the AOKs now come into play. In each case, the professor's response to my disagreement would be quite different. According to the methods utilised in the arts for constructing knowledge, the English professor might want me to offer more clarity and justify my view through appeal to the work itself and my own emotional, intuitive or rational response and it would all be very interesting.

Were I to challenge my chemistry professor's support of atomic theory, or worse yet, tell my mathematics teacher that Leibniz and Newton had got calculus all wrong, however, then both would be justified in pointing out that I'm mistaken and take the time to teach me what I need to know to understand that my own emotional response or my own particular belief is not relevant. If I persisted, I would need to rely on far more than my own experience or knowledge to continue the conversation; I would still need to appeal to the shared knowledge of other chemists and mathematicians who have done the work, shown it to the community and had it justified through peer review. In other words, in these AOKs, my own private view is still irrelevant in terms of both what the nature of the AOK is interested in and in terms of the methods of how knowledge is constructed within them.

However, there are other ways of judging the individual's perspective in these 'hard' sciences or in mathematics. We might ask in what ways the personal experiences, prejudices or knowledge of a particular scientist influence the way in which the science is conducted?

- **Confirmation bias** is one example in which you might explore how personal knowledge might influence the interpretation of data. Confirmation bias is interpreting data in a way that supports what you already believe, or only appealing to data which supports a view you already hold.

- A **logical fallacy** is using logic or reason in a way that appears correct but upon closer analysis is flawed. Logical fallacies are another way in which individuals' own development of knowledge can sometimes lead to unreliable knowledge. The methodologies of the AOKs are sometimes able to catch or identify these fallacies and weed them out before they affect the community's shared knowledge.

You might also attempt to extend the idea of personal knowledge to a group of people if you wanted to explore how a group's paradigm might be limiting or influencing the direction of knowledge development in that AOK.

TASK

- 12** Research a number of logical fallacies and develop a presentation identifying which AOKs you think those fallacies would be most damaging in. Do various fallacies have anything to do with WOKs: which WOKs are most influential in the various fallacies?

DEEPER ANALYSIS

While the scope and methods of the sciences might have a limited relationship to personal knowledge, other AOKs might have far more to do with it. The arts, for instance, seem far more interested in engaging with an individual's personal knowledge. My own personal experience and perspective will be more involved in participating in the arts, whether it be as a creator or observer. Part of my experiences of a work of art are the emotional and subjective experiences it conveys, though of course this is not all that art is meant to be.

While the relationship between a volume of gas and its temperature expressed in Boyle's Law is certainly what my physics teachers tried to convey to me, what I *felt* about it was irrelevant. When it comes to Van Gogh's *Almond Blossoms*, however, the experience it seeks to convey is far more than information about almonds or blossoms. Art is a real challenge to work with in TOK because there is no obvious way of working out just what it is trying to convey, but whatever the case, my own personal judgement about the piece plays a more significant role.



What does Van Gogh's *Almond Blossoms* convey to you?

Similarly when the fictional character, Port, in Paul Bowles' novel, *The Sheltering Sky* says:

'Because we don't know when we will die, we get to think of life as an inexhaustible well. Yet everything happens only a certain number of times, and a very small number really. How many more times will you remember a certain afternoon of your childhood, an afternoon that is so deeply a part of your being that you can't even conceive of your life without it? Perhaps four, five times more, perhaps not even that. How many more times will you watch the full moon rise? Perhaps 20. And yet it all seems limitless.'

- He (Bowles) is not merely recording the thoughts of his fictional protagonist, he is attempting to capture a profound and common experience of what it is like to live a human life: that moment when our own mortality edges into our consciousness and makes us experience our daily life anew. Philosophy might be the discipline that attempts a more direct or scientific examination of that experience, but literature (or the arts in general) seeks to explore these general and shared truths in a way that relies far more on the personal knowledge and experience of the knower.

■ Shared knowledge of a community influencing an individual's personal knowledge

■ Rituals and traditions

The other side of the coin has to do with how communities convey knowledge to individuals. Sitting in a classroom and learning, or reading a textbook, is one way in which a community of knowers conveys its knowledge. But the previous arts example opens up a way of thinking about how other types of knowledge might need to be conveyed in other, more subtle, ways.

Religious and indigenous communities teach us about the world in the sense that an important element of being part of a religious or indigenous community is learning how that community approaches the world and what they think about it. However, there is far more to being a part of these communities than just sharing beliefs. Part of being religious or part of an indigenous community is linking your being to the world in a particular way, and by 'being' I mean in an active sense.

Living in a religious tradition or indigenous culture is to be, to exist in the world in a certain way, a way which sometimes is not learned through books and lectures, but through other avenues such as participating in rituals or exploring myths. Rituals are things people do but they are also a way of aligning one's personal knowledge and experience to the community's.

How does this type of knowledge get conveyed to the individual? Scholars describe a number of facets of ritual, including:

- their **formality** (actions which are abstract and divorced from everyday activity)
- their **repetitiveness** (they happen again and again, the same way each time without alteration)
- their **effectiveness** (participating in a ritual actually effects a change in you and your status in society and your status among other people)
- their **earnestness** (participating in ritual is far more than just 'going through the motions')
- the way in which they **restructure our beliefs** by simplifying key beliefs and messages and getting us to believe them through the use of ritual.

Consider the difference between acting in a school play in which you take part in a wedding, and actually participating in a wedding as a groom or as the bride. You might undergo exactly the same actions and you might say exactly the same things, but taking part in the genuine ritual imposes a new status upon you; you end up in quite a different situation.

More than just transforming your status in a community, religious or cultural rituals help teach key beliefs, values and knowledge, which are developed and shared by a community of knowers and are imparted to those taking part in that community. This is done in a far more personal or 'deep' way than simply being told them or learning them. It is more like learning how to play a sport by playing it. Training and learning movements in the sport are only part of the process – getting out and doing it gives you a knowledge that is unattainable through simple instruction.

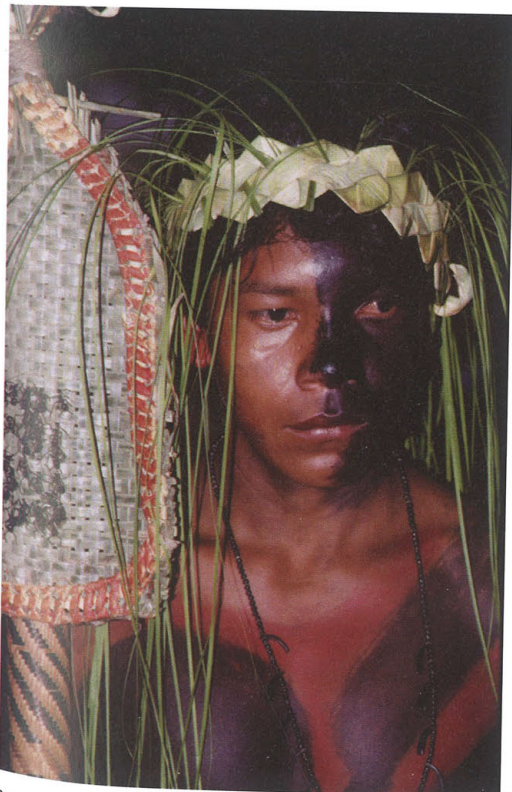
It could be said that being part of a culture or a religious tradition, and undergoing the various rituals involved, conveys a type of knowledge and experience in a similar way; you have to live the ritual for it to have meaning and for it to genuinely convey the knowledge encoded within it. Because of this, you could argue that you cannot fully understand the knowledge conveyed unless you are a full participant in that ritual. In your own language classes, for example, you might be studying rituals from other cultures. But do they contain knowledge for the participants that cannot be conveyed just by reading about them in a textbook?

I once had an experience which brought this point about the power of ritual and belief given to me by ritual into sharp relief. I was living in England during the 2012 Olympics (when it was held in London) and after the Olympics were over, I noticed that many of the little plastic United Kingdom flags that had only days earlier been displayed in shop windows, in front of houses and other places, had suddenly found their way into rubbish bins and were sometimes just lying on the pavement. As an American who, for my entire school education, stood before an American flag repeating the Pledge of Allegiance every morning with my hand over my heart, and who been deeply impressed by the reverence given to the flag, I suddenly noticed that I felt that were I to come across an American flag, plastic or otherwise, I simply could not leave it lying there.

The ritualised daily pledging I participated in had inculcated a very profound belief that the flag was of special significance. Witnessing other flag-related rituals, like the proper folding of it, the lowering of it to half-mast or uniformed soldiers lowering it and raising it at the beginning and end of the day and learning about the proper disposal of it, further embedded the belief that it was special.

These other rituals are natural outcomes of the belief that it is a genuine symbol of great importance, and this belief is encoded into young Americans through the spoken and physical daily ritual of the Pledge of Allegiance. That ritual and the encoding of that knowledge was utterly successful; that belief sits with me even 30 years since I last pledged allegiance to any flag.

There are other examples all around us. In some schools, students stand when teachers walk into the room to inculcate the belief that respect to teachers is due (a crucial belief in education). Militaries have intense initiation periods ('boot camps') in which a soldier's beliefs about individuality are deconstructed and reconstructed to prioritise the group (a crucial belief in battle), and many indigenous cultures have complicated



Young Satere Mawe transitioning into adulthood

and sometimes violent coming-of-age rituals to inculcate the belief that this person is now an adult in the culture (crucial belief for the development of the individual and culture). This sort of knowledge is deeply personal and it has a unique relation to the shared knowledge of the community.



Examples of rituals

TASKS

- 13** Rituals are not just 'play acting' or repetitive behaviour. They are formalised actions, repeated at particular times or events and contain within them a series of beliefs. So brushing your teeth the same way each day would not be a ritual, unless you believed that not doing it the same way would mean disaster.

Think about what rituals have impacted your life. They may be religious, cultural, political or social. Can you identify the beliefs or knowledge that are encoded in that ritual? How has that belief impacted your life? Could that belief, or the knowing of it, or the having of it be given in some other way? Why or why not?

- 14** Research a coming-of-age ritual in an indigenous culture relevant to you (it might be your own). Present the elements of the ritual and explain the beliefs that are passed on by participating. Discuss whether you think this knowledge or these beliefs can be passed on through other means.

■ Myths

One way of understanding the word 'myth' is as a story that misleads or a claim that is simply not true. Myths, as used in religious and indigenous knowledge systems, however, have a far more profound function, one that is in many ways related to ritual. While still literally false, in that they do not offer scientifically exact descriptions of the world or how it works, they nevertheless offer 'narratives' which serve to convey a certain kind of knowledge, often having to do with themselves: who they are and how they relate to the world. You might say that they 'orientate' the individual in the world, giving him or her a direction, but in a way that requires personal reflection. Rituals often make heavy use of these sorts of narratives and many rituals are 're-enactments' of key narratives. The Christian ritual of the Eucharist or 'communion', for example, is a ritualised re-enactment of a narrative found in the New Testament developed to convey foundational beliefs in the Christian faith. Participating in that ritual and its accompanying narrative connects you to that community of knowers.

One of my favourite myths comes from the early Celtic myths of Ireland. Featuring prominently in Irish mythology is Fionn MacCumhaill, a hero not unlike other heroes found in cultures all around the world.

The legend of Fionn MacCumhaill

When still young, Fionn meets a wise and ancient druid and studies the ancient ways under him. This druid had spent seven years attempting to catch a very special salmon, which had eaten nine nuts that had fallen into a magical well of knowledge and had therefore gained all the world's wisdom. The first person to eat this salmon would then gain this knowledge for himself and the druid wanted the salmon for himself.

The druid finally catches the salmon and sets the salmon over the coals to cook. He momentarily leaves Fionn in charge of cooking the fish, but with instructions not to touch it under any circumstances. While the druid is away, Fionn notices a blister on the fish's skin and he pokes at it with his thumb, burning it on the hot oils. He immediately pops his thumb into his mouth to soothe the burn. At this point the druid returns and asks Fionn if he's eaten the salmon but even when Fionn answers no, he realises that Fionn has inadvertently received the wisdom of the world. The druid then gives him the rest of the fish and in later life Fionn could recall any of the world's wisdom simply by biting his thumb.

Source: Traditional tale



Fionn MacCumhaill

This knowledge both gives Fionn the wisdom to become the rightful heir to his father's kingdom, but also places upon him the responsibility of that burden. Similar tales are told in indigenous North American mythology, Welsh mythology and other connections can be made with the Abrahamic accounts from Genesis of how moral knowledge is passed on to people.

There are a number of ideas one can draw from these stories, many of them about the nature of knowledge and the burden of having it. It is sought by the wise, it renders special status and responsibility on the knower, it is often protected or prohibited but gained through deception or accident, and while the rewards for such knowledge are great, it is often only gained after great sacrifice: things can never be the same.

Myths need not have the same sorts of obviously mythical elements as in the legend of Fionn MacCumhaill. Myths might be constructed out of genuine historically accurate stories, but take on 'mythical status' in terms of the deeper values and beliefs coded within them.

An example of this might be the tale of the ill-fated Donner Party. In 1846 a group of settlers had set out for California from the American mid-West. They were trapped by severe weather in the mountains of eastern California and were forced to spend nearly four months of the winter snowbound with little food or other supplies. Over half the settlers died, and some survived

only because they had resorted to cannibalism. While a clearly documented historical event, the history of the Donner Party did more than just teach generations of young Californians about their history. It also highlighted a number of key values and beliefs that Americans were meant to exhibit: a sense of adventure, the value of perseverance, the importance of commitment to the group, the inherent significance and value of struggle and an almost holy regard for the settlers of the West. In other words, teaching of historical fact managed to take on a mythical dimension: American school children weren't taught this just for the sake of it, they were taught this to help guide them in life; it gave them

an identity. In the context of other stories of early American colonisation and westward expansion, American school children developed a particular approach and identity which is in some ways quite different than other countries around the world. This regard for the settling of the West is seen by many (and reasonably so) as being at the expense of other stories from the indigenous people who already had lived in the area. Their stories are often simply not taught; and if they were they might cast quite a different light on the stories of America's westward expansion. Myths then are not opposed to historical fact, but exploring them does raise the question of how historical narratives can become 'mythological'. The telling and teaching of them can take on a significance which turns them into something more than hypotheses about 'what happened' and into something by which we direct our lives, and in which to ground our community's basic values.

The point here about these myths and their relation to personal knowledge is that they do embody the knowledge of a community, but it is a sort of knowledge or a way of knowing that is never meant to have the same status of unambiguous scientific description. These myths (or the mythical retelling of history) rather incorporate a system value and meaning that is lost if simply told to the individual through lectures or books. Myths, whether political, religious or historical, offer in their metaphor and imagery an attitude to truth which requires a different approach and which is not entirely obvious. In fact, making their truths obvious generally renders them mute.

TASKS

- 15 Consider your own education about the history of your country. What common themes are used to explore the details of that history? Are they woven into a narrative, not just about how your country came to be, but about what sort of values and beliefs are *beneficial* or *significant* (or should be) to you now?
- 16 Look at your IB History specification or the history syllabus of your school or school district. What narrative can you find in the choice of topics that the students are expected to study? Do the topics highlight certain kinds of human behaviour or certain kinds of human relationships? Suppose you were an alien from space – what would just looking at the specification tell you about the people whose history that is?
- 17 Find a 'creation myth' or 'creation account' prominent in one culture. Get into small groups and read about it. Discuss what you learn about the people from that account. What issues are on their mind? What are the questions to which this account provides answers? What knowledge is being conveyed? Is it simply historical or scientific? Does it contain beliefs and knowledge about how to 'relate' to the world? How do you think this knowledge would aid a person from that community? In what ways do the non-literal elements of the myths help in developing understanding? Does the notion of 'truth' take on a different aspect here?
Now share your ideas with another group's responses. How are they different? What about the students in the group – do you think the cultural background of the group might account for these differences? Does it make sense to suggest that some interpretations are better than others? How do you think a person from that culture would approach the myth? What other cultural elements are needed for the myth to 'make sense'?

In this chapter, we have explored how an analysis of knowledge claims based on the five elements of the knowledge framework might proceed. However, the knowledge framework is only a *frame* for your ideas; they can be applied in any number of ways, but they are useful to help you stay focused on knowledge.

Remember also, the elements of the framework are only meaningful within the context of an AOK. So whenever applying the knowledge framework, make sure that you are relating it to one of the AOKs; they are meant to help you think more clearly about them.

Personal and shared

Highly structured

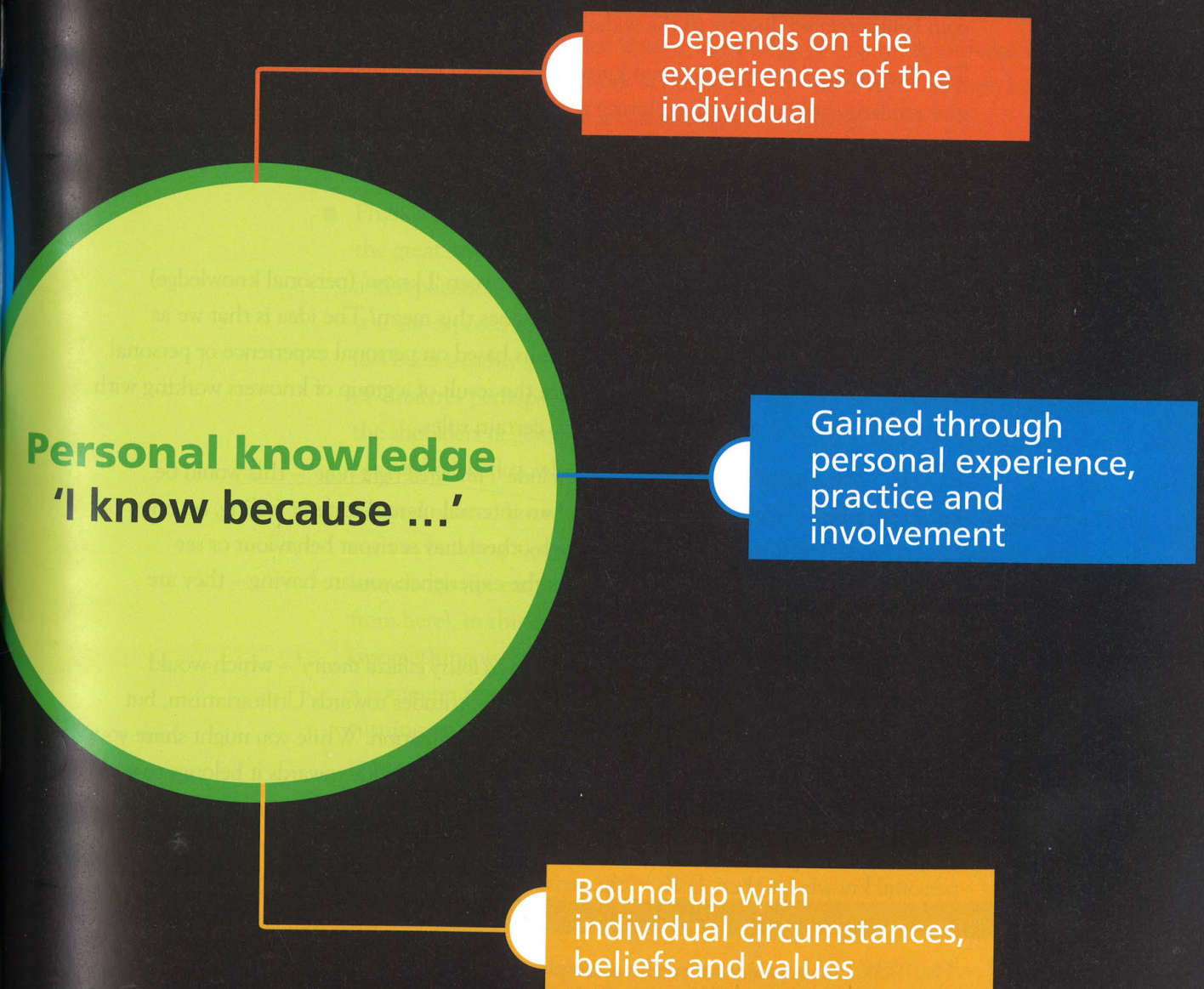
The product of more than one individual

Shared knowledge
'We know because ...'

Systematic

Source: IB Subject Guide

knowledge



Anecdotal out, personal in

Another important tool (one that has been explicitly referenced in the TOK prescribed titles) is the relationship between **personal knowledge** and **shared knowledge**. This chapter explores this relationship, showing what it means, why it is part of the TOK syllabus and gives examples of how it might be helpful in an analysis of knowledge.

TOK, possibly more than any other of the IB Diploma subjects, is the opportunity for students to place their own experience and beliefs at the centre of their learning. However, in the past this has created a problem in that too many students started talking about their own knowledge as if that was all there was, not taking into consideration how their own beliefs related directly to the wider community of knowers around us.

The distinction between personal knowledge and shared knowledge was introduced to give students better ways of exploring this relationship. We have already looked at this in Chapter 2, when discussing the knowledge framework's links to personal knowledge (see pages 38–41).

■ Personal knowledge

The TOK Guide begins with the distinction between 'I know' (personal knowledge) and 'We know' (shared knowledge), but what does this mean? The idea is that we as individuals sometimes make knowledge claims based on personal experience or personal reflection, whereas other types of claims are the result of a group of knowers working with a particular methodology and according to certain rules.

Examples of personal knowledge would include '*I am tired right now*' – this would be known through some sort of measuring of an internal mental state or feeling, no one else has access to this experience. Although others may see your behaviour or see your expressions, these are not the same as the experience you are having – they are consequences or signs of that experience.

Similarly, you might claim that '*Utilitarianism is a lousy ethical theory*' – which would be known again through an analysis of one's own attitudes towards Utilitarianism, but presumably after a rational process of analysis and evaluation. While you might share your understanding of Utilitarianism with others, your own attitude towards it belongs to you and you alone; when it comes to deciding whether you like Utilitarianism or whether it is true you are the one authority on that knowledge. These types of knowledge claims are personal knowledge then, both in the sense that they are about you, but also that their justification depends on an appeal to facts only you have access to.

The TOK Guide offers a range of examples of the sorts of things that might count as personal knowledge (see page 18 of the Guide) which are slightly different, and includes skills or knowing how to do things, knowledge gained through your own experience of the world, what you happen to have learned in your classes and what you will be tested on, and finally the knowledge for which you have actually done the research to learn, perhaps in an IA or EE.

■ BUILDING KNOWLEDGE QUESTIONS

You might fashion TOK presentations or essay examples out of the relationship between examples of personal knowledge and the WOK: *In what ways does reason lead to personal knowledge? What is the role of intuition in the sort of personal knowledge that is difficult to explain to others?*

■ Shared knowledge

Shared knowledge relates to claims which are the result of the work of others or in conjunction with others and me. 'The Gross National Product refers to the market value of the products and services of a nation' and other definitions have very little to do with my own experience or reflection – the community of economists has defined it this way. I might even claim to know that 'The GNP of Canada is about \$1.5 trillion' but again, this knowledge (in my case) relies entirely on the work of others – both the community of economists who have defined the key terms but also the researchers who have actually measured the GNP of Canada. This knowledge can be called 'shared' knowledge in that the knowledge was developed in a public forum, relies on the work of others for any one of us to claim to know it and requires verification by others before it can be considered reliable.

The Guide offers two specific examples of shared knowledge:

- Physics, it says, is a discipline that is 'shared' in that teams of people have been building the great system of knowledge that comprises physics, and have been using peer review and replication of results to make its claims more reliable. Consider how the knowledge you are exposed to in physics (or any other science class) includes a list of facts that has been steadily growing for hundreds of years. The eleventh-century monk Bernard of Chartres perhaps said it best when he suggested we were like those standing on the shoulders of giants and that we see further, not because of our 'keener vision', but because of the knowledge of our predecessors.
- Second, shared knowledge can be considered knowledge of 'how' to do something, such as building a computer. While knowing 'how' is often thought of as personal knowledge (for example, knowing how to tie a shoelace or how to get to Rome from here), in this case the Guide suggests that knowing how to build a computer is something we know as a group. Very few people, if any, would know how to build a computer from scratch (from mining the ore for metallic components through to turning on a finished laptop), but together we, as a community of computer-builders, manage it. The 'we' then in 'we know' refers to a wide community with a number of specific skills and specific knowledge. 'A computer is the result of a complex worldwide cooperative effort' (TOK Guide, page 17).

DEEPER ANALYSIS

Making this point in an essay or a presentation would be a good move, but backing it up with a real-world example would show far greater understanding. Many students, for instance, talk about Professor Andrew Wiles' success at 'solving' Fermat's last theorem, but few will go into any amount of detail about the previous knowledge that he had to make use of to do it. One might discuss this within the 'Historical development' element of the mathematics knowledge framework: *What sorts of mathematical knowledge had to be*

constructed before Wiles' particular proof was even imaginable? Another worthwhile point to explore is the role of peer review in Wiles' initial proof and how that peer review was necessary for his personal knowledge to become 'shared', that is, for it to become a genuine addition to the mathematical canon.

One approach to personal knowledge taken by many students is to claim that whatever they happen to know counts as personal knowledge; but this is far too limiting. Take, for example, the claim 'I know that the GNP of Canada is \$1.5 trillion.' By saying this I might be pointing out that this is my own personal knowledge. I can list the things I know and if 'the GNP of Canada is \$1.5 trillion' happens to be one of them then I can say, 'Yes, this is on the list of the things I claim to know.' But the notion of personal knowledge needs to be more sophisticated than this. The key to all of these is to recognise a distinction between the claim that you know and the truth of the claim itself. That you know something is one thing, but whether what you claim to know is actually true is another.

Rather than pointing out that you know something, it is more interesting to ask, 'How is it that I have come to this knowledge? What is it that makes this claim the sort of thing that I want to say is knowledge (rather than opinion or a guess?)' or 'How reliable is this knowledge that I happen to have?' There is an element of the personal to it in that I am pointing out that I happen to believe it, but the 'content' is shared. The claims themselves are the result of a series of methods and concepts that have been developed by a community.

The claim's justification and the concepts and ideas used in that justification are the result of an agreed upon series of ideas having to do with the nature of knowledge or in the AOK (scope and applications) and the definition of key terms (concepts and language) or the rules surrounding what counts as 'justified' (methodology). You cannot be that sort of knower (an economist, or a mathematician, or an historian) unless you agree on those basic starting points. So in these cases your own personal knowledge still has deep relationships with knowledge formed by a community, what we call 'shared knowledge'. You might develop an interesting analysis focusing on this interplay between coming to know something as an individual and how this relates to the community. This, and the point about acquiring knowledge, was discussed in Chapter 1.

It might also be helpful to distinguish between propositional and non-propositional knowledge in relation to the personal and shared distinction. Propositional knowledge will take the form of 'I know that such and such is the case' while non-propositional knowledge can be thought of as knowing how to do something.

For example, it is propositional knowledge to say that, 'The square of the hypotenuse of a right-angled triangle is equal to the sum of the squares of the other two sides', or that, 'The rules of rugby state that you cannot pass the ball forward with your hands.' These are examples of shared knowledge, as outlined above.

But you might also say, 'I know how to find the length of a side of a right-angled triangle given the lengths of the other two sides', or, 'I know how to play rugby.' These would be non-propositional forms of knowledge. But are these also examples of 'personal knowledge'? They certainly relate directly to 'me' and describe a personal skill or attribute, but how do I know that I know how to do these? I might claim that I know how, but doesn't the justification of that claim require me to engage publicly with the demonstration of that

knowledge? Despite my promises to know how to apply Pythagoras' theorem, doesn't a community of mathematicians (often in the form of my mathematics teacher) have to judge whether or not I indeed *do* know? I know the rules of rugby, but I am very reluctant to throw myself on to the pitch and demonstrate this skill (never having played rugby before in my life!).

Not all non-propositional knowledge requires this level of public justification (whether or not I know how to tie my shoelace or get to Rome seem to be justifiable in the absence of others – my shoelace either gets tied or not; I either get to Rome or not), but some instances of 'knowing how' to do something certainly do seem to need this public verification. Might these then also have an element of 'shared knowledge' to them?

Another common point students sometimes use to explore shared knowledge suggests that, because the knowledge is disseminated or given to others, this alone means it is therefore 'shared' knowledge. Technically, yes, telling others about what you know will be 'sharing it', but this is to miss the more sophisticated point about how the knowledge has been constructed.

For example, the sharing of results might be a necessary part of turning a knowledge claim developed personally into an established or a reliable claim. In other words, the sharing of information is required to turn something that 'I know' into something that 'we know', something the community is willing to stand behind. This is the case in the sciences, where the sharing of results is required so that others can replicate the results or review the data and then verify that it is 'true' or correct. While giving out the information is certainly sharing, it is what happens next (replication of results and peer review) that makes something genuinely 'shared' in the sense we are talking about here.

A good example of this would be the Fleischmann–Pons cold fusion claims made in 1989. Martin Fleischmann and Stanley Pons claimed to have run experiments, the results of which they claimed could only be explained by hypothesising that nuclear fusion occurred at room temperature rather than at millions of degrees, as it does in the hearts of stars. If true, this 'cold fusion' would have opened up a new form of nearly limitless clean energy. But it was after other scientists reviewed the findings and experiments and failed in their attempt to replicate the results that the claims were dismissed. Cold fusion might still be possible, but it just has not yet become something that 'we' know how to do. In other words, simply claiming that they had personally achieved their amazing results was not enough to make Fleischmann's and Pons' knowledge *reliable* or *justified*. The scope and application and methodology of physics require that its type of knowledge be shared by the community. If only one person holds it, and bases its justification on only one person's (or group's) experiments, then it cannot be called genuine knowledge in the field.

In history, this need to share evidence is similar (though, of course, the notion of 'experiment' is quite different). For example, The International Group for Historic Aircraft Recovery (TIGHAR) claims to have amassed a 'preponderance' of evidence which together suggests that they have found the wreckage of US pilot Amelia Earhart's final flight, a mystery unsolved since 1937. There are others, however, who question the reliability of the evidence and the logical steps TIGHAR has used to explain the evidence. With such strong disagreement in the community of Earhart experts, it is

difficult to say that the claims made by TIGHAR can be thought of as genuinely 'shared' in the sense that it has become part of what the 'historical community knows' implies.

■ BUILDING KNOWLEDGE QUESTIONS

You might explore this or other scientific or historical controversies or 'conspiracy theories' to look into the relationship between personal and shared knowledge, specifically by exploring the methodology of the AOK, and the role of bias, pre-judging or personal commitment in forming judgements.

■ Objective / subjective knowledge

Another way of approaching the shared and personal distinction is to look at it in terms of **objective** or **subjective knowledge** – a distinction that you might explore in relation to scientific knowledge. This is not to suggest that the terms 'objective' and 'shared' knowledge are synonymous, nor that 'subjective' and 'personal' knowledge are either. 'I am feeling hunger' or 'I think it's true that muesli is delicious' are objective facts about me right now, but the experience of hunger or my love of muesli are clearly subjective feelings and attitudes. My point here is that objective and subjective knowledge have some elements in common with that of shared and personal knowledge.

■ Objective knowledge

Science is often held as being the most 'objective' approach to the world that we have. This is often tied to two elements of the creation of scientific knowledge: the 'scientific method', and peer review. 'Objective' knowledge is knowledge that does not appeal to any individual's opinion or private experience to justify its claims.

When a scientist is testing a claim's truth, they will only appeal to evidence that can be used by others; they will interpret that data through appeal to theories which have themselves been justified through others' empirical data and tested by the community; and they will share their own experiments in the hopes that others will run the experiments and interpret the data for themselves. The point of all this is to weed out personal bias known to plague the interpretation of results and distribute the responsibility for the knowledge across the community. In this sense, the knowledge resulting from this process is 'objective' in that it has nothing to do (hopefully) with the scientist's own personal biases, prejudices or circumstance, and it's 'shared' in that the process is about a community taking responsibility for the justification and reliability of that knowledge.

Our scientist might be from anywhere in the world, have any range of personal beliefs about religion, ethics or personal beliefs about how to live one's life, but when it comes to the construction of 'scientific' knowledge, the scientific method is a guard against any of these beliefs affecting the 'objective reliability' of the claims. Our scientist might even end up disagreeing with some well-established scientific theory, but their disagreement is irrelevant unless they can appeal to sharable empirical data to justify it. Any preconceived ideas remain 'hunches' until they can be supported through the scientific method. To suggest that the knowledge is 'objectively reliable', however, does not imply that the knowledge is not going to shift and change over time and with new evidence. What is deemed 'reliable' or 'justified' by a community of knowers is certainly relevant to the evidence available and the available concepts or theories to explain them.

Newton cannot be criticised for developing a system of physical laws which are unreliable when dealing with infinitely massive or infinitely small objects – he simply didn't have the conceptual framework nor the evidence available to later physicists.

TASK

- 1 a Imagine you are a scientist, exploring natural sciences. Develop a chart which identifies the various types of shared knowledge and personal knowledge that the scientist might use. Where does the scientist rely on his or her *community* for knowledge, where does he or she rely on their own *individual* knowledge (or 'intuitions')? In what ways do both types of knowledge add or detract from the *reliability* of the scientific knowledge being constructed?
- b Now try the same exercise with knowledge from another AOK. Where does, for example, an historian rely on a community for knowledge? How does an artist draw on the knowledge of the community? What effect does their personal knowledge have on the construction of their knowledge?
- c Now compare the two charts. What conclusions can you reach about the scope and applications of those AOKs or the methodologies of them in relation to personal and shared knowledge?

This is, perhaps, the perfect exemplar of what 'shared' knowledge amounts to. The publicly agreed upon method, the importance of peer review and the reliance on data which, in principle, can be experienced by all, mean that the construction of scientific knowledge occurs in a public realm and relies upon the community's own processes and collective experience.

■ Subjective knowledge

Subjective knowledge, on the other hand, is knowledge about, or is justified through, facts pertaining to the individual. If I claim, for example, that E.E. Cummings' 'O sweet spontaneous' is a beautiful poem, I am partly relying on certain shared knowledge developed by the artistic community about Cummings, his technique and skill, but I am also referencing personal taste. It is a matter of personal taste that I like it.

This does not mean, however, that these sorts of claims cannot be debated. I think it is beautiful but I might try to convince you as well. To do this I would probably highlight the sorts of things we can agree on (the use of imagery and metaphor, the use of irony and surprise, the technique and skill and the historical context, in other words the 'shared knowledge' about the poem and whether they are present in this work of art) and then try to convince you that these sorts of things should be valued as 'beautiful'. We could probably well agree that these attributes are objectively just the sorts of things that literary critics agree makes a poem beautiful.

This second stage, whether or not you like it, however, is not something I can point to; it is only something upon which you either agree with me or not. In other words, I would try to 'calibrate' your artistic sensibilities to mine. Given that it is shared knowledge that the sorts of attributes mentioned above make a poem beautiful, I would argue that the *particular* use of them by Cummings in this particular poem mean that you should also experience beauty when reading it. This, of course, is quite a different challenge.

Many people argue ethical knowledge is similar to this: we can debate whether passive euthanasia should be morally accepted, but to carry on the debate we would have to explore objective facts (the 'shared knowledge', what the terms mean, for example, and whether they are applicable to this situation), and hope that this analysis will uncover shared ethical values.

■ Subjective and personal, but *important!*

Far from being 'unreliable' or less important than objective, subjective knowledge is perhaps the most important in terms of the meaning and significance knowledge plays in our life.

When I claim to know that 'O sweet spontaneous' is 'beautiful', I am less describing some observable fact about it – rather, I am pointing out the meaning or significance to me or my own response to the poem. Ethical claims might also have a large element of this: I don't particularly care, for example, what happens to the pressure of a gas when its volume is halved, as described by Boyle's Law, and my disinterest certainly doesn't have any effect on the behaviour of gas. Of course if I am working with gases, knowing this is important, but it would be odd to say that I have an opinion on the behaviour of gases, nor would I 'judge' the gas for behaving a certain way. Gas does what it does regardless of what I think about it. I might even argue that Boyle's Law is false and nothing about the behaviour would change because of it! But I certainly do care about your personal views on violence or fairness when playing football with you and I will judge you accordingly. My own ethical views about fairness are very important to you if I am marking your TOK essays; you will have an opinion about my behaviour when I'm marking your essays in a way that you would not have an opinion about a gas' behaviour as you work with it.

So personal knowledge, though quite subjective, might be far more significant or meaningful in certain circumstances because these subjective elements are important guides in how we relate to one another and to the world.

TASK

- 2 Reread the earlier section on the role of myth and ritual in passing on certain types of personal knowledge (pages 44–6). Do you think that the method of transmission of this knowledge (the values and meaning encoded by a culture) make that sort of knowledge *important* or *significant* to the knower in a way that is different from the *importance* of the knowledge you develop in chemistry or physics? How would you rank the knowledge of the AOKs in relation to this other sense of 'importance'?

The TOK Guide gives students and schools a lot of freedom in choosing what elements of the TOK course to focus on. When it comes to AOKs, WOKs and the knowledge framework, you can choose what interests you most and develop essays and presentations around them. One of the May 2015 exam titles, however, did mention personal and shared knowledge explicitly: 'With reference to two areas of knowledge discuss the way in which shared knowledge can shape personal knowledge.' This shows that this relationship is an important one and you should do your best to use it to help develop your TOK thinking.

IN PRACTICE

So, how might breaking up knowledge into personal and shared categories help you as a TOK student?

When thinking about the AOK Ethics, for example, the distinction is useful to explain how different background experiences and beliefs might result in the construction of different ethical conclusions of a situation. One of the biggest mistakes students make in presentations and essays is claiming that there is a large element of personal knowledge in ethics without making any attempt to explore how that might work or what that might mean. It is taken as fact and left without any justification or analysis – in other words, students merely describe a claim without offering analysis.

The following is one way that a deeper analysis might be carried out using the tools of the personal knowledge and shared knowledge distinction.

In 2003, after American forces invaded Iraq to end the Hussein regime, it was discovered that American soldiers running Abu Ghraib prison had been abusing Iraqi soldiers. Treating prisoners this way went against international law and many felt it also violated basic standards of human decency. Eleven soldiers were charged with a range of offences and were dishonourably discharged; of these, two were sentenced to prison.

I was exploring this event with a group of students in a TOK class, discussing our attitudes of disgust and horror at the treatment of the prisoners and how we construct our ethical judgements in situations like these. One student then questioned my assumption that the soldiers' treatment of the prisoners was wrong. 'Perhaps the atrocities they committed before this meant that this sort of treatment against them was justified,' he said. 'Perhaps they deserved it.' I had not anticipated this response and was certainly challenged by it, but I think the personal and shared distinction can help make sense of the differences in our two types of approaches.

Proponents on both sides of this debate can certainly identify and agree upon certain facts of the matter. Regardless of our final ethical stance, this student and I could, or at least could 'in principle', agree on certain facts about the situation. Using objective facts, we could agree on, for example, exactly what, physically, the soldiers had done to the prisoners. We could agree on certain facts about the soldiers: where they were trained, where they had grown up, what schools they had gone to and what sort of careers they'd had in the armed forces up to that point. We could also agree to certain facts about the prisoners: again facts about how they grew up, their backgrounds, what they had done prior to becoming prisoners.

An historian would approach the case by looking for what actually happened in terms of what historian R. G. Collingwood would call the 'outside' of an event: a description of objects and their movements. These facts could be publicly verified and agreed upon.

Collingwood argues in *The Idea of History* (1946) (particularly in Part V: Epilegomena, section 1 and 2) that genuine history is the study of human actions and this requires two elements: what he calls the 'inside' and 'outside' of events. Historians must both explore the 'outside' of events, that is, they must incorporate and use as evidence in their analysis the movement of people and objects (for example, armies, individuals, natural occurrences). This however, doesn't make an analysis an 'historical' analysis. What is needed is the 'inside' of an event which Collingwood describes as the ideas and thoughts of those involved in the events and would include their beliefs, their motives, their desires and their aims. This, however, requires imagination on the part of the historian in recreating those thoughts and requires the historian to 're-think' the thoughts for him- or herself. Collingwood's ideas in this section of *The Idea of History* are full of interesting opportunities to explore history's scope and applications, methodology and links to personal knowledge.

Some of these facts, of course, could only be verified in principle in the sense that we might not practically be able to account for every second of the soldiers' or the prisoners' lives, but reasonable guesses about the movements they made and what happened to them are the sorts of things that are open to being known by the wider community. The facts, to be established as 'facts', would be established in a public arena; in other words they would be 'shared'.

So far so good. But the fact that the student and I agreed on a number of facts about the situation still doesn't account for why we came to different judgements about the ethical justifiability of the soldiers' actions. This is where personal knowledge as a tool of analysis might be helpful.

In addition to the shared facts about the case, there are also individual facts about us, the student and me, which are relevant to the making of an ethical judgement here. The situation calls for a judgement on how human beings should treat each other and in what circumstances, but what I have experienced as an individual might have a lot of relevance to the case. For example, perhaps I have experienced being humiliated in the past and that experience has taught me something about the nature of being intimidated or humiliated. That judgement (that it is very unpleasant) will, in a sense, be added to my knowledge of the facts of the case to conclude that those actions would have been unpleasant for the prisoners. In other words, my personal knowledge about the experience of being intimidated will be relevant when constructing knowledge about the ethical value of a situation where intimidation is occurring.

I might have other forms of personal knowledge, such as familiarity with living in the Middle East or familiarity with living in the USA or some familiarity with individuals living in those cultures. In some cases, the media might have heavily influenced my knowledge: often even 'hard-facts' news coverage could in some sense 'calibrate' my attitudes by reporting or highlighting some facts rather than others, or by emphasising certain views in various editorial segments, both of which might in turn persuade me that I ought to feel a particular way. These experiences, depending on a whole number of things, might be positive or negative. The personal knowledge (in the form of my attitudes or individual experiences) will undoubtedly become part of my judgement of the situation. Familiarity with the cultures involved might strengthen my allegiance to one side or the other: I might be very familiar with a foreign culture but still feel a stronger allegiance and desire to 'protect' my own, an argument made by both sides of any conflict. These elements of personal knowledge, of course, inform all sides of the ethical debate. The experience of war, for example, whatever 'side' you are on, might raise feelings of compassion for those involved, or further embed the desire for revenge against the 'other side'.

DEEPER ANALYSIS

Consider the ways that I am suggesting your ethical principles might have been affected by things (the media, personal history and experience, familiarity with facts, and so on). What WOKs do you think are relevant here? In what ways might your intuition be influenced by these factors? How does emotion function in interpreting facts and how are those emotions initially calibrated? In what ways will your reason (in terms of what you think of as being 'reasonable') be impacted by the experiences you have?

So, without getting drawn into any debate about whether or not the actions of the soldiers were 'right or wrong', TOK students can unpack the situation and explore the reasons why different ethical judgements have been made.

The distinction between personal and shared knowledge is an important one here, as it will help me identify some of the reasons why people have the knowledge they do. If the distinction is used properly to explore the judgements that people have made then it might help me identify and make sense of the beliefs and knowledge that I have as well.

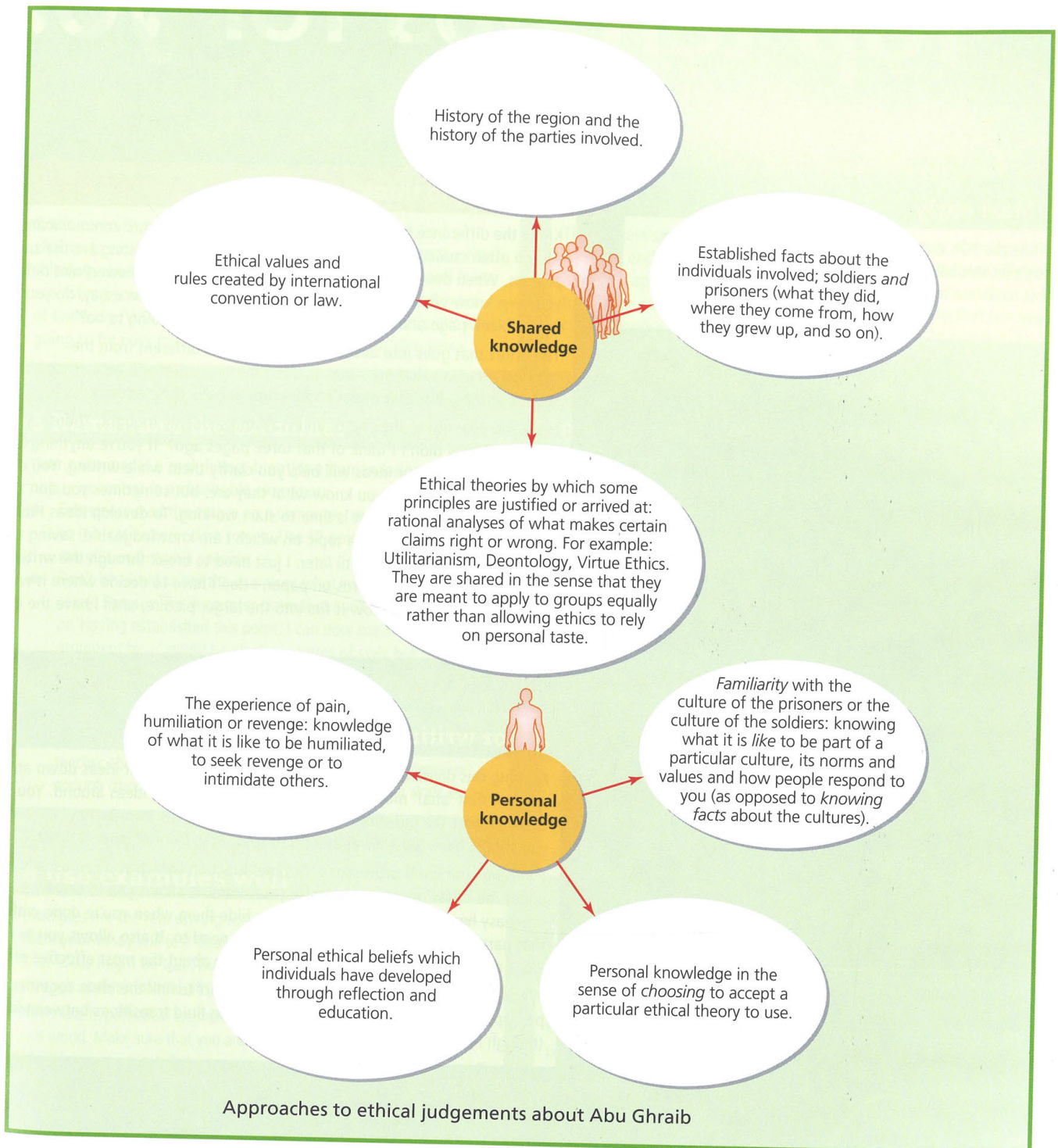
TOK TRAP

Reminder: In a TOK discussion of Ethics, *do not* get drawn into *whether* an action is right or wrong or what makes an action right or wrong (leave that for the IB Philosophy students).

TOK is a tool to help you consider instead how different ethical beliefs are *constructed*. So avoid asking 'Is action X right or wrong?' – this is a question about the action, not a question about *knowledge*. Many TOK analyses in both the TOK essay and the TOK presentation go astray because students think that 'Is X right or wrong?' is a question about knowledge. Below are some better formulated knowledge question relating to ethics:

- *In what ways is the construction of our ethical judgements influenced by social conformity?*
- *How do we come to the judgements that something is right or wrong?*
- *In what ways does the use of reason add reliability to the claim that some action is right or wrong?*
- *How might an awareness of history make our current ethical judgements more reliable?*
- *What counts, and how can we decide what counts, as evidence in an ethical debate?*

Can you think of some more?



Sources

For more information on the Fleischmann–Pons cold fusion claims:

- <http://partners.nytimes.com/library/national/science/050399sci-cold-fusion.html>

For more information on the final resting place of Amelia Earhart:

- www.theguardian.com/us-news/2014/oct/30/amelia-earhart-plane-finally-found-not-so-fast
- <http://tighar.org/>
- www.miamiherald.com/news/local/community/miami-dade/article1973300.html

Top ten tips for your

1 Start early

While the TOK essay is a relatively short piece of work, don't let this lull you into thinking that it is easy. Your first ideas are rarely the best – let them develop over time.

2 Writing to think ...

Know the difference between *writing to think* and *writing to communicate*. All too often students assume that thinking and communicating are the same process. When developing a presentation, do you open up PowerPoint before you even know what you are going to say? When writing an essay, do you start with a blank page and think 'What is my introduction going to be?'

The effort that goes into developing your ideas is different from the subsequent effort that goes into shaping the essay that will be assessed. Both require writing, but that doesn't mean they are the same activity.

Have you ever got to the end of an essay and suddenly thought, 'There's a good idea, why didn't I think of that three pages ago?' If you're anything like me, jotting down your ideas will help you clarify them while writing. You can't present your ideas until you know what they are, but sometimes you don't know what they are when it is time to start working. To develop ideas I usually need to start writing about a topic on which I am knowledgeable, saving the things I'm not sure about until later. I just need to break through the writer's 'block' and start putting words on paper. I don't have to decide where it will go in the final essay, or how it fits into the larger picture, until I have the other ideas ready to go.

3 ...or writing to communicate?

Keeping this division is crucial. Once you have written your ideas down and reached that 'aha!' moment, you can go back and shift ideas around. You can easily answer the question 'What needs to go into my introduction' because you should have the answer among your ideas in front of you.

Try using your word processor's 'Outline' function (which you can usually find under the 'View' menu) to organise your notes. It allows you to break up ideas into easy headings and text paragraphs, hide them when you're done with that part, and expand them later when you need to. It also allows you to move ideas around when you need to start thinking about the most effective order.

When it comes to communicating, you can start to link the ideas together, perhaps cutting out the headings and offering fluid transitions between ideas (though headings can still be appropriate).

TOK essay

4 Brainstorm each title

Don't commit yourself to any one title until you have had a chance to explore them all. Use a mind-map to dig into the title, thinking about what examples to use, what the command terms are asking you to do, and what areas of knowledge and ways of knowing (WOKs) might be helpful. The title you thought was going to be easy might turn out to be difficult, or vice versa.

5 Remember the examiner

Your examiner is a real, living, breathing human being, and a happy examiner is a charitable examiner:

- Examiners read the essays on a computer, so format your essay so it is easier to read on screen. Use 12-point font, normal-sized margins and double spacing.
- Don't be afraid to tell the examiner what you are doing in the essay. Phrases like 'A counter claim that I will now examine is...' or 'Having established this point, I can now use it to develop my argument by...' might be clunky in terms of style but they help the examiner follow the process clearly.
- Since you don't know what your examiner's academic speciality is, think about whether your argument and examples will be convincing to someone who teaches that subject. Talk to another teacher about your ideas to see if they think they are rigorous enough (though only your TOK teacher can read your draft essay).

6 Use examples well

Examples are the real driving force of a good TOK essay. Without them your essay will just float around in the world of abstraction. Your ideas might be true, but you need to prove that they are through analysis of real-life, concrete examples.

Never use hypothetical examples – TOK is about knowledge in the real world. Make sure that you analyse the examples well – don't just *identify* an example, tell the examiner *why* it's a good example, what it shows and how it shows it. Your examiner might know a lot about your topic (or nothing at all), so you need to make the examples convincing.

Avoid obvious examples. People have known the Earth was round since the sixth century BCE. Galileo certainly had his troubles with the Church, but this will be pointed out by thousands of other students. Search for examples that others might not have thought of.

7 Develop a clear argument

The biggest single drawback of most of the hundreds of essays I examine each year is that they don't have a clear argument. They are more accounts of everything the student knows about the topic than essays. Your essay needs to take a position that is a clear response to the title, not just a list of ideas that occurred to you during the process of writing.

8 Reference properly

The TOK essay is not a research project, so you don't need to spend hours in the library, but it is still a piece of academic writing. An effective argument is presented responsibly and this includes full, properly formatted referencing. If the examiner thinks you have referenced something incorrectly (or not at all), they can just open up a web browser and look for themselves. Good referencing shows them that you are paying attention to detail, and essays that pay attention to detail are generally good essays.

9 Show your teacher

Teachers can only look through an essay once, and they are not allowed to edit it line by line, but they can give you a sense of whether you are on the right track and have a discussion with you about the ideas you have presented.

10 Remember the assessment criteria

Read through the assessment criteria for the essay and keep them to hand while you are writing. Remember points 2 and 3 above: present your ideas in a way that meets the requirements of the criteria.

Top ten tips for your

1 Get your knowledge question right

The number one reason why good presentations go bad is that the knowledge question (KQ) is poorly formulated. Knowledge questions must be first and foremost about *knowledge*. Questions posing an ethical dilemma, or questions about the psychological processes of *learning* or questions about how ways of knowing work, are not knowledge questions. *You must focus on questions about the construction or nature of knowledge*. Discuss your plans with your teacher early so you can get advice on your KQ. The presentation is too short to start off in the wrong direction and hope that you can get back on track. You should also keep in mind that the moderators can see your KQ, so do your best to make it a good one.

3 Close your PowerPoint!

It's crucial for you to make some initial decisions *before* you begin worrying about slides. You have to know *what* you are going to present before you can think about *how* you are going to present it. That means that the PowerPoint can wait. First, you must spend the time to work out just what you think about your KQ. Develop your arguments and consider the implications and significance of your positions. Once you have developed your ideas then, *and only then*, should you think about how you want to present your ideas. The skills needed to develop your ideas successfully and the skills needed to present them in an effective way are quite distinct.

2 Choose a good real-life situation

By good, I mean, concrete, *real* and one that is genuinely interesting to you. You might consider investigating something you encountered during your Extended Essay research, something from an IA or something relevant to what you hope to do at university. Just make sure that it serves as the source of a good question about how specialists in a discipline construct knowledge.

4 'Through the lens of an AOK' is not necessarily TOK

Many mediocre presentations simply take an issue and explain what the AOK would say about it. However, just *using* the AOKs doesn't mean that you're doing TOK. Explaining how the AOK might approach an issue amounts to little more than a first-order explanation of what an AOK would say in some situation or another. It only really becomes TOK when you compare the AOK's approaches (both similarities *and* contrasts) to constructing knowledge. The best advice would be to use the knowledge framework as a comparative tool to help structure your analysis.

5 Take responsibility for your audience's learning

Your TOK presentation is a real part of *everybody else's* TOK learning. Most students present to an audience of their class members – they are therefore hoping to learn something from you. If you think of it as a *lesson* for them you will then need to take responsibility for it and make a genuine effort to *teach* them something.

TOK presentation

6 You are the presentation, not your slides

There is nothing worse than looking at the back of a student's head as he or she turns away to read the slides. Students too often think that they are just along for the ride when it comes to presentations. You must remain in control of the material and use any slides to support what you want to do with the material. You should also consider the option of not using slides! I have seen fantastic presentations using no visuals at all. One memorable presentation included students taking turns constructing a mind-map on the whiteboard recording their main ideas. At the end of the whole thing the class had a lovely visual. The only thing you *cannot* do is read an essay. But don't get gimmicky – *your ideas must be clearly and convincingly offered* – if your teacher doesn't know what you're on about, you can't get good grades. Finally: avoid Prezi – it makes anyone over the age of about 24 really nauseous!

7 Think about what an effective presentation is like

There are all sorts of websites, books and TED talks about the giving of presentations. Don't assume that your natural charm and good looks will be enough to keep the audience enthralled. Have a look through these resources and pick up a few pointers. Many come out of the world of business, and while *no one* wants the boardroom experience, advice on how to be concise, effective and motivating might be helpful.

8 Don't. Read. From. Your. Slides.

I mentioned this before, but I'm going to mention it again.

10 Fill in the PPD correctly

The PPD (the Presentation Planning Document) is a *planning* document which can be quite useful. The various sections of the PPD ask you to identify key elements of the ideas you are presenting. First, you must identify the RLS and the KQ, then explain how they are related. Your 'outline' section then briefly explains the main argument you're making (and must contain genuine content – what you're going to say not just signposting phrases such as, 'Then I will discuss my NEXT Area of knowledge,' without telling us what it is or what your discussion is about). The final 'show' section then needs to explain how what you've argued applies to your initial RLS. As the PPD is *also* used to help moderators find evidence that your teacher's marks are deserved, it is very important that you fill it in fully – it will help the whole process.

9 Practise

You'd be surprised how many students move from the copying-out-the-notecards stage to the on-the-stage stage. Once you've worked out how you want to present you should really practise, practise and practise. Practise in front of the mirror, then in front of your cat. Then video it and watch it. Then present to your parents or your neighbour. Ask for feedback – if they don't understand what you're talking about, then the message isn't getting through. Do you *really* need to be in a toga? Are you sure that the news debate format explains the ideas clearly? If your audience hasn't learned any TOK, then you've not done your job.

Your assessment

TOK is not an assessment-driven course. The assessment model that is used in TOK (a fairly short essay and a short presentation) is simply not up to the task of assessing fully the myriad of skills and concepts that are important to the course. This means that the genuine learning of the course is developed and honed within the context of the course.

That being said, however, the assessment element and its importance should not be minimised. Having taught for many years, I know the determination, commitment and the earnestness that students bring to their assessment makes for genuine and deep TOK learning.

So, what does it take to be successful? What skills and practices will help you avoid traps and easy mistakes, and give you the opportunity to flourish as a TOK thinker?

I have divided what follows into three sections: comments, suggestions and general advice relevant to both assessments; comments focused on the essay; and the presentation. Primarily, the idea is that the type of thinking you need to demonstrate is quite similar, but the ways in which you demonstrate that thinking are very different.

■ General advice for both the essay and the presentation

While the assessments are quite different in final outcome, the sorts of skills and content you are exploring in your TOK assessment are quite similar. Below are a number of pieces of advice common to both the essay and presentation that you will want to take into consideration when working on your submissions.

■ Understand how your work will be assessed

It is important to understand just how your work will be assessed. Never go into any assessment without understanding the standards and expectations you are being judged against. The IB's assessment criteria for subjects are not a closely guarded secret; you can simply ask your teacher for all the assessment information.

TOK assessment checklist

- Obtain the assessment criteria for both the essay and the presentation. ☐
- Make sure you understand the various elements of the Level 5 descriptors. ☐
- Ask your teachers any questions you may have. ☐
- Make sure you have the criteria to refer to as you are writing your essay or developing your presentation. ☐
- When you have completed your essay or presentation, go through it with these criteria and make sure you meet the Level 5 descriptors. ☐

Both the essay and the presentation are marked against 'global impression' marking. The assessment criteria for both can be found in the TOK Subject Guide on pages 62 and 64.

Global impression marking is the name given to the sort of marking based on an examiner's overall view of the work. In many of your IB subjects there will be a number of different criteria, each worth a few points here and a few points there and, added up, they give you the total marks for a single piece of work. In these cases the different criteria might be trying to evaluate different learning skills, meaning that the overall points will be divided up: some points will be given to how well you understand the content; some to your evaluative skills; some to your ability to construct an overall coherent argument; and so on.

TOK is different, in that all these skills are woven together into a series of 'level descriptors'. The idea is that once the examiner has read an essay or watched a presentation, he or she will be able to judge in general terms whether that piece of work is of a really high quality, in the medium range or in the low range. Both the essay and the presentation in TOK use 5 levels, with 5 being the best. To earn the top level, the work should demonstrate competence in a range of skills. The examiner will draw on what they know to be good skills and look for them in your work. This means that your work does not have to be perfect in every way!

I have read many essays that were overall very good essays and for which I have awarded top marks, despite them having had weak paragraphs, or other elements which were far from perfect. In fact, I'm not sure there is such a thing as a perfect essay! However, the global impression marking tool allows your examiner to weigh minor problems against an otherwise very strong essay and still award you high marks. Your job is to give them every reason to see that overall excellence and award you the top marks.

TASK

- 1 What will it take to meet the assessment descriptors? Look at the Level 5 descriptor of the assessment criteria on pages 62 and 64 of the Subject Guide. With a partner, make a list of the types of things that you think an essay or a presentation would have to contain to earn that description.
 - a For the presentation, what sorts of things does a 'well-formulated knowledge question' have? How can you properly connect a knowledge question to a **real-life situation**? What can you do to show that you have 'extensively explored' an issue? What makes an argument 'convincing' and how can you show that you have considered the significance of your argument?
 - b For the essay, what will guarantee that you have maintained a clear focus on the questions about knowledge relevant for your title? What can you do to show awareness of different perspectives? What makes an argument 'clear' and how are counter-claims 'effectively evaluated'? How can you best show the 'implications' of your argument?

Compare and contrast your answers with another group or your teacher's answers. Add to your own list what you have learned.

DEEPER ANALYSIS

The assessment criteria do not make any reference to the way the presentation is delivered. This is because the IB is not keen to penalise students for being shy or finding public speaking a challenge. However, being able to present well does help you meet the criteria.

How might this be? With a partner, think about the following question: *What presentation skills will help me to achieve a top mark for the TOK presentation?*

■ Assessment is a two-step process

For both the essay and the presentation, the best advice I can give a student has got to be to 'consider the assessments as a two-step process'.

First, you have to make decisions about what you think about the topic, and second, you have to make decisions about how you would like to present those ideas. Too often students think of the process as being a single focused effort which results in an essay or a presentation. Students who take the time to first plan their work and then develop their ideas before showing them to their teacher are on the right track: they understand that the process needs a step which first brainstorms ideas, plays with alternatives and explores a variety of approaches, before settling on the set of ideas that they genuinely want to explore.

Consider your submission as the culmination or final product of your thinking, not as a sort of 'stream of consciousness' captured in real time (or 1,600 words). You want the essay that you finally submit to the IB or the presentation you give to your teachers to be a sculpted product, not a chronological list of whatever ideas you happen to have in the order that you had them.

It is only after they have developed their ideas that the best students will consider how best to *present* their work. They ask themselves:

What does a good essay look like and how can I present my ideas in this form?

or

What is the best way to demonstrate my thinking within the confines of the 10-minute presentation?

TOK TRAP

The key thing to remember is your first attempts at articulating your ideas should not be thought of as part of the final essay or presentation.

Students are busy and interesting people with a lot on their plates, so the temptation to sit down and think 'I am now going to write my essay' or 'I am now going to start my presentation' is a strong one.

However, you should remember that, generally, the first ideas are not the best ideas. When movie directors finish filming, for example, they then have to craft and mould what they have filmed into a final product, changing the order of scenes, and perhaps

cutting up shots and placing other shots in between. They never simply link all the film together in the order in which it was shot.

The same can be said for your essays or presentations: you might spend a lot of time writing as you think, but don't confuse the work you have done while thinking with the final product. You must craft your ideas into a final product. So if you are firing up the word processor or presentation software and hope to get to your word or time limit and then hit 'print', you are going to end up giving your examiner your first ideas – which is never a good plan!

The production of an essay or presentation must be broken into two stages:

- 1 Deciding what to think.
- 2 Deciding how to present what you think.

Some of the first discussions I have when students begin the process of developing their essays or presentations sound something like the following:

Student:

What should I put in my introduction?

Teacher:

Well, it depends on what you want to say. What is it that you're going to say?

Student:

I don't know yet.

Teacher:

Then how can you introduce it?

In other words, they are trying to present their ideas before they have even had the ideas! The key to success, then, is to break those processes apart. There is more advice on how to do this below.

IN PRACTICE

Target questions

Questions you can ask yourself to help you **decide what you think** about a topic:

- *What is the title actually asking me to do? (What are the command prompts?)*
- *What key terms do I not understand?*
- *What ideas do I have initially? (brainstorming / mind-mapping)*
- *What might my conclusion, thesis or answer be? What are my initial intuitions about what my response will be?*
- *What could my argument for this be? What will I have to establish in order for my argument to be well supported? (argument plan)*
- *What real, concrete examples can I use to illustrate my points?*
- *What are the questions about knowledge that I can address to help answer the title?*

Questions you can ask yourself to **decide how you should present** what you think:

- *What are the command prompts and how best can I show that I have done this?*
- *What order will I present my ideas? Which ideas need to be discussed early, so later ideas will make sense? (essay or presentation plan)*
- *How should I present my counter-claims and counter-arguments?*
- *How can I construct my introductory paragraph (for the essay)?*
- *What needs to go into my concluding paragraph (for the essay)?*
- *Which definitions do I need to include?*
- *How can I make the presentation of my ideas (in the essay or the presentation) engaging? How will my listener or my reader respond to the way I am presenting the ideas?*

■ Description, analysis, evaluation

The TOK essay and presentation not only rely on good content (interesting TOK points and examples) but also on good skills in putting forward an argument. The global impression marking descriptors for the top band in both essay and presentation do ask the examiners to think about the quality of the argument. Students, however, too often fall into the trap of not fully understanding the elements that go into developing a convincing argument and the types of thinking that are relevant.

At the most basic level there are three 'levels' of thinking, each of which demonstrates different thinking skills:

- description
- analysis
- evaluation.

These are key in all elements of the IB Diploma, and you often see them in the exam questions. In general, however, TOK examiners (both external and your own teachers) are most interested in seeing good analysis and evaluation. They want to give you the highest marks possible, but without these higher-order skills clearly demonstrated, they simply can't. One of the biggest problems faced by examiners is to wade through the pages and pages and minutes and minutes of *description*, trying to uncover the *analysis* and even the *evaluation*.

But what are the differences between these? What do they mean?

Description is an identification and definition of key ideas. To describe is to point out what is there and does not necessarily take any higher-order thinking or understanding. A submission which contains too much description but then doesn't adequately show further thinking skills will not earn top marks since it won't show an individual approach or highlight the thinking of the student.

For example, imagine a classroom full of TOK students being asked to describe what is 'propaganda'. They might say something like 'images or speeches designed to get people to develop certain beliefs' and point me in the direction of certain Second World War posters in the history department corridor. This shows that they know what the word 'propaganda' means and can identify examples of it. This would be an example of shared knowledge; it is the accepted definition, identified as such by a community. The description might even be incredibly detailed and show a very good understanding of what propaganda is.

However, there is nothing of the individual in it and it does not show a full understanding of the concept of 'propaganda'. This will come out in the higher-level thinking skills of analysis and evaluation. Description in both the presentation and essay are an essential part of a well-structured response, but frequently students fill up their time or word count with too much description.

Analysis, however, is far more interesting and will allow your teacher's assessment to climb into the higher levels of the criteria. Analysis is about uncovering the relationships beneath the surface of ideas, showing where the complexities of the ideas are and how the ideas relate to other concepts and ideas.

Analysis is a description of how ideas work (rather than just what they are) and being able to explore this shows a better understanding of the material. For example, in an *analysis* of propaganda I would have to make decisions about how to present what I know about propaganda and which elements I'm going to explore and how I am going to link them together. I might choose, for example, to focus on the use of language and link this to how the emotive language of propaganda influences people in sometimes non-conscious ways into constructing certain attitudes or beliefs. Or, I might explore how visual imagery draws on certain cultural motifs in order to influence a viewpoint's intuitive or emotional response. This is where an individual's own perspective and approach start to come into play. While two students could conceivably give me the same definition of propaganda, it is unlikely that they would choose the same sorts of facets to explore in an analysis, and even if they did, they would probably end up developing their responses in quite different ways. This individuality is what the examiners (including your teacher) will want to see.

Finally, the highest level of exploring ideas would be **evaluation**. In an evaluation of the material you would, from your own perspective, offer a comment on the material or offer a judgement on it. It is not evaluation simply to describe a theory or an idea's strengths and weaknesses; this would be description or analysis because the strengths and weaknesses belong to the theory or idea, not the individual exploring them. Evaluation goes beyond this and might discuss whether that idea is a good one or whether it is in some way better than some others, or it might be to take a stand on some debatable issue, or in the context of TOK, take a stand on some knowledge issue. Of course things such as the strengths and weaknesses are crucial for this.

Evaluation might also (especially in a discursive essay) simply be an argument that a particular issue might be seen in a particular light. An evaluative claim can be considered subjective or an example of personal knowledge which needs a clear argument – evaluation is not obviously true, but requires an argument and support for the idea; the essay or presentation serves as that argument.

For example, it is not an evaluative claim that propaganda often makes use of emotive imagery or uses historical beliefs for their effectiveness; that's just what propaganda does (among other things). However, it is an evaluative claim to suggest that the use of one or other of them is what makes it most effective or which makes it *dangerous*.

This evaluative stance is a challenge for many TOK students. Students often get caught in the trap of offering too much description of ideas or examples, and not getting under the ideas and into the analysis of them. Even more difficult is a sustained and explicit commentary on the material. A good analytical essay (generally in the form of a discursive essay) can show all the TOK skills needed to do well, but in the best essays the student is in full command of the material, using the analysis of the material to make his or her own comment on the material. This is the level students really should be aiming for. The examiners are most interested in your commentary on the material; they don't just need the ideas explained to them. They are TOK teachers and already understand it well enough. They want to know your ideas about the material.

■ BUILDING KNOWLEDGE QUESTIONS

When evaluating anything in the context of TOK, try to remember that the whole point of the course is to get you to be thinking about knowledge. So your comment on propaganda, for example, should focus on how *the things you claim to know* are influenced by the propaganda, not about how you behave or about your *decisions*. Your 'comment on the material' should be about how you think the event, process, or **real-life situation** impacts your *knowledge* about the world.



In what ways and to what effect does propaganda influence our view of historical events?

■ Implications and significance

In the level descriptors both 'implications' and 'significance' are mentioned. To achieve Level 5 in either the essay or presentation, you must in some way engage with the 'implications' of your ideas about the material or the knowledge questions involved and their 'significance'. But what do these terms mean?

Two ways to explore the implications and significance of what you are saying in your TOK assessment is to ask the following questions:

Implications

Now what?

Significance

So what, who cares?

Of course, these words and terms do not need to be mentioned explicitly in your work; you don't have to say 'The significance of my idea is ...' (but that would certainly alert an examiner to what you think the significance of your ideas is!). Engaging with these questions will help widen the scope of your analysis and push what you are saying into a wider context. These are things which are often successfully presented at the end of the essay or presentation.

■ Implications: 'Now what?'

Implications are mentioned explicitly in the assessment criteria for the essay and would certainly be a key element in a Level 5 essay or presentation. Implication in this sense would be about what the 'next step' of the argument might be or what the extension of the

main ideas of the argument would be. The ideas you have, if extended into new contexts, would have various consequences, and one way of evaluating an idea or a position is to explore these implications.

If, for example, you wish to argue that the seemingly random behaviour of human beings means that no human science can be a 'science', then one implication of this would be that various 'laws' created in psychology, economics or geography are not reliable. But, we see that these fields do, in fact, develop laws which for the most part are useful ways of describing general trends in human behaviours. In other words, they do produce laws which seem to describe how people generally act. Your argument will be stronger if you are able to engage with this implication, perhaps exploring this in terms of the differences between human and natural sciences and showing how this actually helps you understand more deeply the scope or application of the human and natural sciences.

Students often try to argue (unsuccessfully in my view) that, because historians often have a perspective, this means that 'all history is biased'. As 'bias' generally suggests that a claim is unreliable, this claim raises a couple of problematic implications. First, it is hard to see that *all* historical claims are actually 'biased'. It would be hard to see how claims such as 'John F. Kennedy was inaugurated President of the United States 20 January 1961' can be biased. Bias is a claim about the use of evidence, and all the evidence suggests that this was the case. A second implication of the claim that all history is biased is that history can therefore not be considered true. If all history is biased then the very notion of 'truth' seems to be jeopardised, and while this might be a genuinely sophisticated point, students often don't engage with this implication. Another example similar to this is the claim 'all truth is relative'. The implications for this are pretty serious for the student's own essay: see if you can work out why.

TASK

- 2 Once you have decided on the thesis you wish to develop, consider the following question: *If my thesis is true, how might this affect other claims, either in the same AOK or another AOK?* Reflect on those other claims: are the effects of your thesis acceptable? Do they lead to contradictions elsewhere? Do they help support or help answer other issues relevant to TOK?

Considering the implications is a good way of reflecting on the strength of your own position – if it leads to unacceptable consequences (that all knowledge is false, for example) then maybe you should reconsider. If it helps support or engage with other issues then perhaps it is a good thesis.

One of the traditional elements of a strong concluding paragraph is pointing out what unanswered questions remain. This 'Now what?' question is another way of getting at that and is another form of 'implication'. You might explore what other topics your main point will help answer or what new context you could apply it to. This sort of 'implication' can't be developed until you have already started writing or nearly completed the essay as the 'what next' is 'what next *after* your own analysis'.

IN PRACTICE

There is another sense of the word 'implication', however, that can be explored before you begin developing your response.

One of the May 2012 prescribed titles is a good example of what this other sense of implication might mean: *Using history and one other area of knowledge, examine the claim that it is possible to attain knowledge despite the problems of bias and selection.*

In 'unpacking' this title, students should be thinking what is implied by the title, meaning what does the title assume? One implication / assumption in the title is that bias and selection are *actually problems when trying to attain knowledge*.

What are 'bias' and 'selection' in the context of history? How do they affect the attainment of knowledge? This would have been a crucial element to explore even before an attempt to engage with the issue of whether or not knowledge is attainable, despite the problems they raise.

The best essays will have pointed this out and explored this problem.

TASK

3 Take the list of prescribed titles that you will have to choose from for your final TOK essay.

- a** Make a list of all the *assumptions* you think are being made by the title (another form of 'implications').
- b** For each one, construct a *knowledge question* that will help engage with that assumption in the title.

For example, above, where we saw that it was assumed that bias and selection are problems, we might ask, 'How do the methods used in the construction of historical knowledge regulate the effect of bias and selection?' or 'Why might the role of intuition and imagination lead to bias or unreliable knowledge in the sciences and history?' or 'What constitute the proper selection of evidence in the construction of knowledge in history or ethics?'

The importance of using knowledge questions such as these in the investigation of the prescribed titles is described in Chapter 1.

In the presentation, this element of applying your conclusions to a separate or different real-life situation is a required element of the top band, and will be explored in more detail below (page 110).

■ Significance: 'So what? Who cares?'

Another key element of the best essays is the way in which they treat the significance of an issue. This is what I call the 'So what? Who cares?' element. Pointing out the significance of an issue means to explain why this is an important question to ask in the first place and why your conclusion is helpful in answering it. The best analyses are of debatable knowledge questions which have genuine consequences for our understanding and approach to knowledge. I am not suggesting that the questions you are exploring will have life and death consequences, but it might be important to understand how knowledge works for various reasons. It might be important in the political realm to understand the effect of certain types of language, for example, or the subtle techniques that academics and scientists might use to make their arguments more convincing than

they should be. Whatever the knowledge questions you are exploring, try to keep in mind why it's important to explore them and use that in your analysis.

The presentation assessment criteria requires you to explore the significance of your ideas: you must explain the significance of your ideas about knowledge for the real-life situation.

The TOK essay

The points above are meant to be general advice for the construction of your ideas, regardless of whether those ideas are presented in the TOK essay or the TOK presentation. This general advice might be applied to the essay and presentation equally, but there are some differences that should not be ignored.

This section is about how to apply this advice to the specifics of the TOK essay.

■ Essay assessment criteria

TASK

- 4 Print off a copy of the essay assessment criteria and try to define or explain the key words (many of which will already be in **bold** type). As you read through this section, see if your definitions are similar to what is written here.

IN PRACTICE

The first task of the TOK essay assessment criteria is to establish the extent to which you have met the primary objective of the essay: *Does the student present an appropriate and cogent analysis of knowledge questions in discussing the title?* (page 60 of the Subject Guide)

In order to understand and use this to help guide your writing, it will be helpful to unpack the key terms in this objective.

The term 'knowledge questions' here *does not imply that you have to list a number of actual knowledge questions*. The idea is that, in discussing the title, you will have to use issues having to do with second-order questions about knowledge as steps in your analysis of the title. You do not have to explicitly list knowledge questions and then try to answer them. Always keep your focus on the main title and use subsidiary knowledge questions as steps towards a full comment on the title.

The term 'appropriate' refers to the relevance of the essay – are you clearly focused on the issues about knowledge which are raised by the prescribed title? In other words, do you understand what TOK is about and can you identify the right sorts of issues to discuss in relation to the title? When you have completed a draft of your essay, go through it line by line and see if you are able to describe why you have made each point. If you can't, it might not be relevant.

The phrase 'cogent analysis' is a bit more complicated but refers to whether or not a student can create a discussion or an argument of those knowledge questions which is a sophisticated and logical 'comment' on the prescribed title. Examiners don't want to just know that you can identify knowledge questions relevant to the title (description), they want to know what you think about them (analysis and evaluation).

The assessment criteria themselves contain two 'bands' which are largely focused on the two aspects mentioned above: 'Understanding knowledge questions' and 'Quality of analysis of knowledge questions'. Even though there are two elements to consider, the examiner's final mark is still 'holistic' in the sense that the examiner will place the essay in one of the five levels based on a global impression after they have read it. The question for you then, is how best to convince the examiner that your essay belongs in Level 5!

■ Deciding what to think

TOK essays are difficult to write. Every year I have students tell me that the TOK is by far the most challenging essay they have had to write, in some ways even more challenging than the Extended Essay. However, I find that the reason many students find the TOK essay so challenging is because they have not considered it as a two-step process: they have soldiered ahead, churning out ideas and words in an attempt to reach the far-off and magical goal of 1,600 words. They often find while they write, however, that the issue is far more challenging than they thought it was. They are then faced with a choice:

Do I go back and change my ideas based on my new thinking or do I carry on towards the finish and make the most of what I have written so far?

Going back is always the best idea because your essay will be far more coherent and directed if you know what you think before you begin presenting your ideas. If you just carry on, the end of the essay will likely not match up with the beginning.

A more structured approach which divides the thinking from the presenting is meant to alleviate much of the suffering that comes with this sudden realisation that after a thousand words the wheels have come off the cart. I don't suggest that this will necessarily make the process easier (although I think it does), but it will probably make it more of an enjoyable journey.

IN PRACTICE

For me the idea is simple: first work out what it is that you want to say, then work out how best to say it. In the case of TOK, you must first put in the hard work of crafting your ideas and determining what it is that you think about the knowledge questions in your presentation or the issues pertaining to the prescribed title. Work out your answer and the various elements of that answer, then make decisions about what is the best way to present it.

These two phases are equally important but they are quite different in the types of questions you are answering in them (see earlier 'Target questions' page 67).

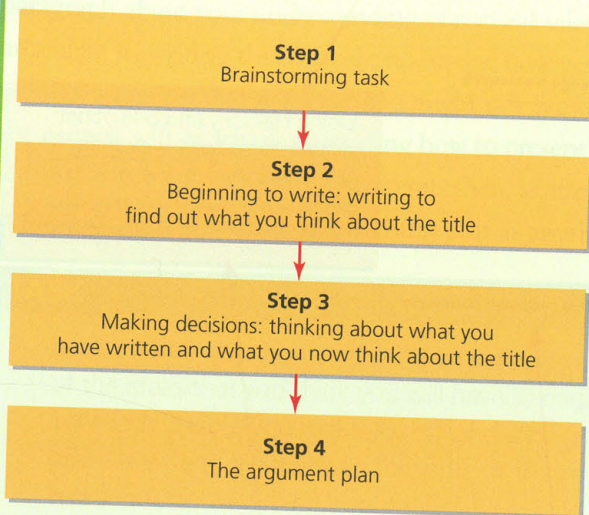
That first phase (**Deciding what to think**) will require you to try to articulate ideas, then test them, cross them out, modify them and sometimes start again, until you develop a series of ideas which together answer the prescribed title or the knowledge question you set yourself in the presentation. During this 'thinking phase', you can write, use sticky notes, mind-maps, spider diagrams or anything that helps you to develop your response.

So how best do you proceed in a way that ends in an essay you can be proud of? The steps which follow can be used as a guide. However, keep in mind that the steps will likely overlap in places. You might be making choices about the sequencing of ideas while you are simply articulating the key ideas of the essay – this is fine, it's all part of the process. The other key point to remember is that this is time-consuming and so represents the ideal situation. In reality you will be subject to deadlines for your writing as well as a whole wealth of other pressures on your time.

In addition to this, you will probably have other homework, other IAs, sports training and fixtures, plays to learn lines for, rehearsals for music events, concerts to go to, movies to see and friends to hang out with. Some of you might take time to sleep as well.

The best advice is to start early, do your best and don't wait until the last minute (but really, you know this already). The prescribed titles come out in September for May examination students and March for November students: you don't have to wait for your teachers to put a process into place to begin preparation.

I suggest that deciding what you think can be broken down into roughly four steps:



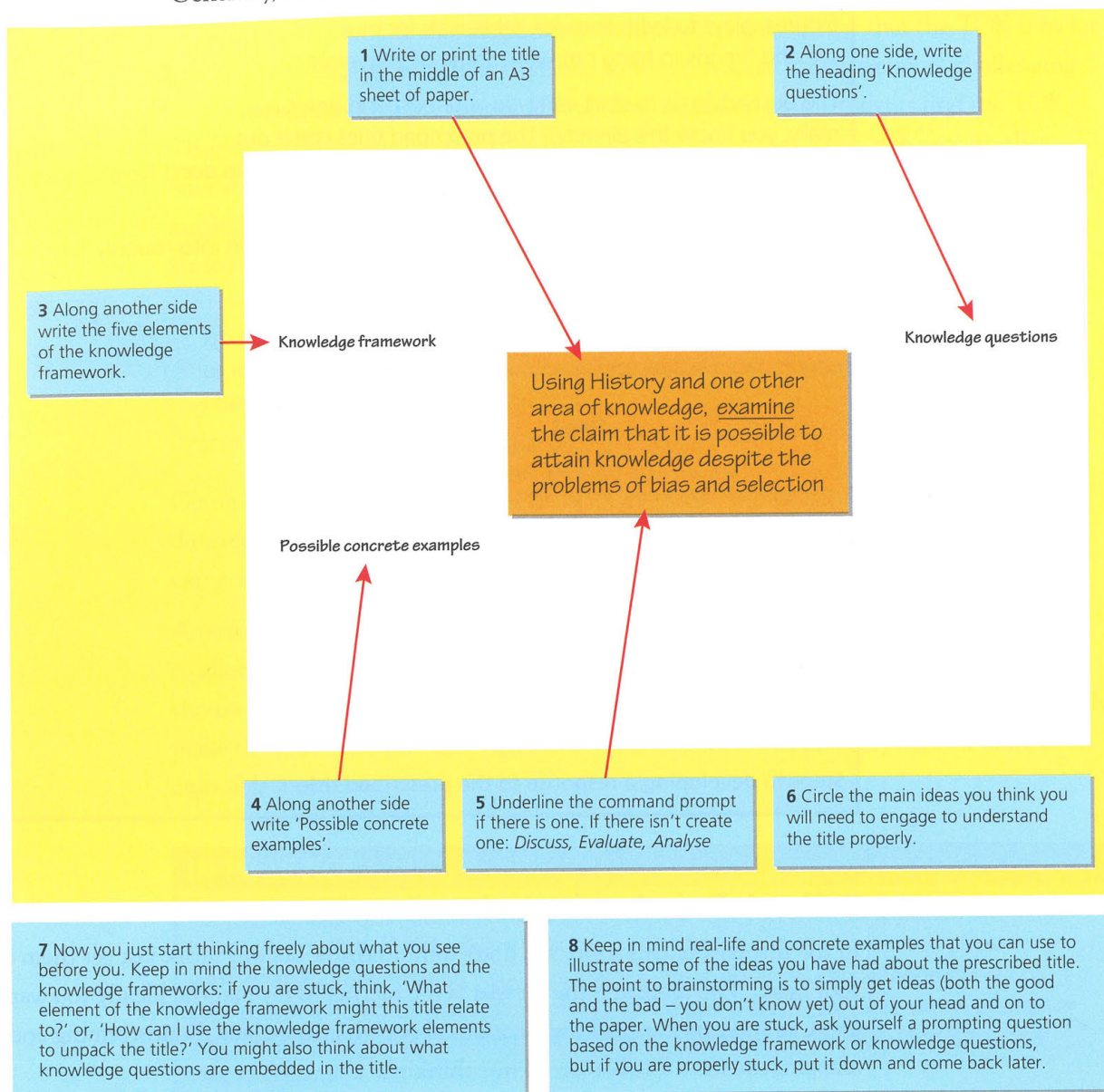
Steps to developing a response to the prescribed title

■ Step 1: Brainstorming task

In the first part of this stage, you don't want to throw out any ideas, just get them out of your head. 'The more and the messier is the merrier' is my mantra. Ideally you want more ideas, so you can start making decisions about what to include. Brainstorming and mind-mapping are ideal for this sort of free thinking.

I try to think about the prescribed title as a mystery box and the 'unpacking' of it as literally breaking open parts of it and seeing what is there (concepts, AOKs, command prompts, key words, and so on). In some cases, if the prescribed title addresses a certain concept 'bias' or a WOK, then this gives you the opportunity to apply a whole range of ideas, if relevant. Simply writing a short paragraph about these ideas might be a way to start writing if you are stuck.

Generally, however, before you start any writing, I would suggest the following:



There is no reason why, at this stage (and really, at this stage only) you cannot explore ideas in collaboration with a friend – you are only throwing ideas around without any judgement of them. When you start to notice that certain of the ideas you have identified mean that other ideas are not going to be relevant, this means that you have begun to establish a direction, you are now making choices and building your own individual response to the title. This is when you should **stop collaborating** as you will run the risk of either giving others your ideas or too heavily drawing on the ideas of others and falling foul of the academic honesty requirements.

You have finished brainstorming when you start to formulate hypotheses about how you will actually construct a response. At this point you might use different coloured pens and highlighters to identify which ideas you like, which examples you think might be fruitful or which elements of the knowledge framework you would like to focus on. When considering the knowledge questions you have identified, you must be able to explain clearly and explicitly why that knowledge question is going to help you answer the title. Do not engage with knowledge questions unless they are clear 'stepping-stones' to developing a response to the title.

■ Step 2: Beginning to write: writing to find out what you think

Often you can begin the next stage by writing words on paper or on screen, not by 'writing the introduction'. In some titles you will have to address certain issues, so start by writing them out.

For example, the May 2016 prescribed title '*Knowledge within a discipline develops according to the principles of natural selection.*' *How useful is this metaphor?* requires you to discuss and explain the biological notion of natural selection. You might start by writing out a paragraph about your understanding of natural selection. At some point you will have to articulate in writing this concept no matter how you approach the title, so you might as well start writing that part out. You might not yet know how best to present it or where in the essay it will go (that's a 'deciding how to present' question), but you will have to engage with it, so just start writing. The secret, then, is after you have done it, you put it away and come back to it later, and do not think of it as anything like a final product.

TASK

- 5 Look at the prescribed titles from which you must choose. For each, make a list of the ideas that you think you will have to engage with, no matter what your approach. Before you make your final choice, you might compare your lists and even practise writing a paragraph for some of the key ideas you have identified. Do you feel comfortable writing about those ideas? Do you have things to say about those concepts? If not, then that title might not be for you.

This phase of writing has unique questions which are different from the questions you encounter in the 'presenting phase' (and by 'present' here I mean, offer your ideas to your audience, which might be in the form of a traditional essay or in a stand-up presentation). In this second phase you will make decisions about the order of the ideas, which ideas will go in which paragraph or on which slide.

The following sections offer some advice about how to use these two processes in relation to both the essay and the presentation.

- **Tip 1.** Some word-processing software has what is called 'Outline view' which makes developing and sequencing ideas very easy. I use it when I have to produce large and complex pieces of writing, like a textbook. (I am using it right now!)

I use the headings to organise ideas, and use the subheadings and 'Body text' to begin the process of articulating the ideas. When I am done with one section (or have run out of things to say), I just close it so I cannot see it any more and move on to work on some other section. By collapsing various levels, you can see at a glance how the main elements of your writing are shaping up.

As I write in this view I begin to uncover ideas I didn't know I had and I can easily move them about. When the time comes for the second half of the process, writing to present the ideas, I can easily switch the view to 'Print layout' and voila, much of my essay is written already!

- **Tip 2.** As you identify particular ideas and concepts you will begin finding relationships between them. Here again you should try to write out how you see those relationships working. As you do this you will now start thinking about (or looking for)

genuine examples that will be helpful in illustrating your ideas. Here too, rather than worrying about when to present the examples, just practise writing them out – take up as many words as you need to make it a good example.

The best ideas you will have during this stage are the ideas about what sorts of **knowledge questions** you come across while thinking about the title. Remember not to let your knowledge questions draw you away from staying focused on the prescribed title. One section in your drafting of ideas at this point should be an articulation of why the knowledge question you have uncovered is relevant to the title: just a sentence or two will suffice.

As you continue this, you will find that you are building a general approach to the title, or ideas about what you *think* about the issues contained in the title. If you are lucky you will have a number of different approaches or ideas to choose from. Work through some of the details for each of the approaches to see which are more fruitful, or which you have the most ideas for. Your challenge in the latter stages of this *thinking* phase is to make decisions about which ideas you prefer to explore.

■ Step 3: Making decisions: thinking about what you have written and what you now think about the title

Now that you have written a few words, you can start reflecting on just what you have decided about what you think. You can think strategically about this by asking the following questions (but not necessarily in this order):

- Which of your ideas *do you actually think are correct*? It's far easier to justify a position which you believe to be the correct position.
- Which ideas do you think are *best justified*? You might find that you are not sure what you think, but that you have a couple of good arguments for one idea or another.
- Which ideas do you think you have *enough* words to fill an essay with? You don't want to choose a topic then spend a lot of time on it only to find that you really don't have a lot to say about it.
- Which ideas do you think are most *surprising* or interesting? Often you can capture the imagination (and approval) of the examiners if you can develop an idea that challenges the status quo or explores something in a unique and surprising way.
- Which of your ideas are a genuine response to the prescribed title as set (not some subsidiary knowledge question you have associated to the prescribed title)? You *must* make sure that *all* of your ideas are relevant to the prescribed title. I always have a copy of the main essay title to hand when working on essays – keep going back to the title and ask, 'Is what I'm writing directly relevant to a response to that title?'

TOK TRAP

While you are producing ideas in this way, and at this stage, you must not think of the words you are writing as the final words, in their final form. Once you have decided on your approach, you might wish to use much of what you have written but you will

still have to work through the ideas and develop your writing.

You will have to add *signposts* linking the sections together and introductory and concluding passages to help elucidate the points you are trying to make.

■ Step 4: The argument plan

The final outcome of this process should be a clear understanding of what your response to the prescribed title is going to be. After you have made your decisions about which of your ideas you are going to develop and which you think best answer the title, you should try to organise them into an *argument*.

One way of capturing this argument is with an 'argument plan'. This is **not** an essay plan. The essay plan is an outline of the order or 'sequencing' of your ideas – in other words, the culmination of the second stage of the process.

The argument plan is an overview of what your ideas actually are and how they relate to one another. This includes: your overall thesis, or a general statement which is the most direct response to the prescribed title; the various premises or claims that you will use to support the final claim; and what sorts of examples you will use to illustrate those points.

As the final essay should consider counter-claims and counter-arguments, you should identify these elements in your argument plan and have an idea of what you are going to say in *reply* to them – since you don't want to leave objections to your argument unanswered!

The first stage of the process is complete when you can answer the following:

1 What is my answer to the title? What is my *thesis* (a sentence or two which clearly identifies what I want to tell the reader)? If you are writing a *discursive* essay you should still be able to consolidate your ideas into an easily managed general claim you want the reader to come away with.

2 What do I have to establish in order for my thesis to be well justified?

3 What would someone who disagrees with me say and how would I respond to them?

4 What concrete, real-life examples am I prepared to offer as illustrations of my points?

5 What are the implications of what I am saying?

6 Why should anyone who thinks about the nature of knowledge care about what I'm saying?

7 What knowledge questions do I engage with as part of my response to the title?

If you know these things, then you have already done all the hard work. Congratulations! Get some sleep.

■ Writing to present

After you have decided what you think, you now have to think about how to sculpt it into the form of a 1,600-word essay. You might have already written quite a few words, so much of that work is done. Now you just need to ask yourself questions about what makes a good essay and take your material and apply those ideas.

I do not intend to offer specific advice on how to write the perfect essay. Your TOK teacher and other teachers you are working with will have the time and expertise which will help here. Crafting an essay is another process altogether and will require moulding and rewriting throughout. Your teachers will be able to put a process into place to help and give you advice. The comments which follow, therefore, are less a 'how-to' but more a 'pay attention to'.

■ Argument plan

A good argument will start with how it means to end. This means that you must know your 'thesis' or conclusion. Can you state it in a brief sentence or two? Does the thesis offer a direct response to the prescribed title?

A good argument will also have a number of 'premises' which, when taken together, give weight to the thesis. You also need to be able to briefly state your premises in a few short sentences.

Each premise will itself need justification. Concrete examples are crucial for this element – they will help illustrate and justify the premises.

A good argument will also be aware of what someone who disagrees with the thesis or the premises would say. Can you articulate the position of someone who disagrees? What would they say in response to you? What examples would they use as evidence against you? Try to make these counter-arguments as strong as possible or else you might be committing 'the straw man fallacy'.

A good argument will also reply to the counter-arguments. It shows good thinking skills to be aware of how people might disagree with you, but even better thinking to then reply to those counter-claims and show why, despite these worries, your position is still better.

In summary, any good argument will make clear the thesis being supported, make explicit the premises and evidence for that thesis, show what counter or alternative positions are available, and why you still hold to your own thesis. If you can do this you have developed a very strong argument.

■ Dictionary definitions

Many of the TOK essays I read while examining make a point of taking the time (and spending the words) to offer an explicit definition of key words in the title. Often this is prefaced 'The Oxford English Dictionary defines X as ...' To me, this is a clear case of mixing up 'writing to think' with 'writing to present'. The student

has been told that 'you should define key words', and while this is probably true, it is not true that the definition actually has to be in the essay! You might not need to include it. The only reason to include a definition in a TOK essay is: if the word is so uncommon that it is unlikely the examiner will know it; if a proper technical definition is required; or if the commonplace definition from the dictionary will actually be tested or challenged.

TOK is a course that should create a sceptical approach to dictionaries and their definitions in the first place – as you will have learned from TOK, the meaning of the words we use are malleable and historically contextualised: the definition of a word will change over time. While dictionaries are useful to identify how words are used at the moment, they are not the sorts of things which necessarily dictate the meaning of those words. We decide how words are used when we use them, and dictionaries just capture this common usage of the moment. The word 'gay' is a classic example: once meaning happy or joyful, it has come to be used as synonymous with homosexuality.

Therefore, offering dictionary definitions and then doing nothing with them suggests that you are accepting dictionaries as genuine authorities of the meanings of words, and this might make a TOK examiner sceptical: have you really understood the nature of language in the construction of knowledge if you think that dictionaries are 'true'?

So, by all means, keep the dictionary close to hand when working on your TOK assessment; they might be very helpful as you think through the various approaches you can take, but it's likely the examiner doesn't need you to write out a definition for them. You might include the dictionary definition if you are making a point about the limits of dictionaries as authorities when it comes to how words are used, but all too often students randomly define 'key words' in the title then completely ignore those definitions or never use them again.

There are two main types of TOK essay:

- **Discursive:** the essay that seeks to discuss.
- **Persuasive:** the essay that seeks to persuade.

Both can be successful responses to the TOK prescribed titles. In many cases, the prescribed title in fact seems to lean towards the discursive approach, but even in those cases students can choose to write in either style.

■ Discursive essays

Essays which try to 'discuss' are said to be discursive. This means that their primary objective is to outline and explain any number of primary issues having to do with a topic. Success in these discursive essays requires that the students identify key issues, then explain them and analyse them fully. At the end of reading a discursive essay, your reader should have a good sense of the importance and significance of the key elements in the area you are focusing on.

Don't, however, underestimate the critical nature of 'discuss' in the various prescribed titles. It is not the 'discuss' of 'Let's meet up for coffee and discuss that movie' – this sense of 'discuss' means merely the idea of talking around an issue and there is very little at stake, or not much by way of significance, in a discussion of this type.

You should be reading the prompt 'discuss' in prescribed titles as more like when your parents say they 'need to discuss your behaviour last weekend' or your Principal calls you into his or her office saying, 'We need to discuss your recent academic performance.' Here 'discuss' signifies that something is *at stake* and that it needs to be *sorted out*.

Your job in a discursive essay is to identify that issue and explore it with an eye to illuminating or clarifying the significant issues and seeking a position on those issues. After reading a good discursive essay, your examiner should understand clearly not just what the issues might be, but also what you think the important issues are, what questions and problems exist, why those issues are significant and possibly how those issues can be resolved.

TASK

- 6 Choose past prescribed titles that ask you to 'discuss'. First make a list of ideas or content that you think you need to discuss (in the way you might 'discuss' a movie). Next make a list of *issues that need sorting out* relating to that content. If you write an essay on the title, it should be on these *issues*.

Things to consider in a discursive essay:

■ Identify key issues

The key to success in this first element is to make good choices. The choice of ideas you wish to 'discuss' is an important decision and one which will tell the examiner the level of sophistication with which you are approaching the title.

For example, a recent title asked students to explore the extent to which the knower's perspective was 'essential' in the pursuit of knowledge. One of the major pitfalls of this title was that students elected to focus on the notion of *how* the knower's perspective *impacted* on the pursuit of knowledge. So an essay which discussed the impact of the knower's perspective certainly would not have been wrong, but it would not have discussed the more sophisticated issues having to do with the notion that the knower's perspective was *essential*.

■ Explain and analyse these issues

The success of a discursive essay then builds on a good choice of what issue gets discussed. The major pitfall in this area is that the explanation and analysis of the material ends up being disjointed, meaning that the various issues identified, explained and analysed appear as if they have little relation to each other. In other words, the essay appears to be more of a 'stream of consciousness' than a genuine discussion.

When students write 'Another issue is ...' or 'This links up to what I have said before in that ...' examiners wonder just what that link is meant to be, or just how the student thinks the next issue is related to those that came before it. 'Moreover' and 'Furthermore' are often also simply signposting (possibly) that another vaguely related idea is coming.

TOK TRAP

Poor signposting

Essays need signposts: connective phrases which tell the reader how each paragraph relates to the main context of the essay and the specific ideas that surround it.

Look at the following 'signposts' and rate them according to how much they actually tell the reader about how the ideas relate to one another:

- 'Another point is ...'
- 'In contrast to this point ...'
- 'Moreover ...'
- 'A counter-claim would be ...'
- 'This leads on to ...'
- 'But things are more complicated than this ...'
- 'Applying this idea to the following situation, however ...'
- 'One implication of this idea is ...'
- 'However, it is not clear that this is entirely true ...'
- 'While there may be strengths to this position, further analysis indicates that ...'

■ Develop a common theme

The point then is that even in a discursive essay, there must be a common thread to the essay which creates clear links between ideas. You might use a particular WOK or AOK to create the context in which you will be discussing your ideas.

I use a variety of metaphors to illustrate this point. I ask students, 'What is the main issue on which you will hang your various ideas like coat hangers hanging on a clothes rail?' or, 'What is the trunk from which your ideas will grow like branches from a tree?' or, 'What is the main idea that your ideas will contribute to, like streams feeding into a larger river?'

This thread, that your ideas are feeding into or hanging from, is the main issue I mentioned above when defining the various types of 'discuss'. It is the behaviour at the weekend or the academic record that will serve to guide and focus the rest of the discussion.

Make sure your examiner knows what that main point is. Having this main context tells them that you have chosen consciously the ideas you are discussing – you are not simply writing ideas down as they pop into your mind: you know how they relate to one another and how, together, they create a single sophisticated discussion of the topic at hand. In the assessment criteria it makes reference to 'knowledge questions connected to the prescribed title'; the main point of discussion of your essay can be identified very effectively through identifying one or two knowledge questions which capture this main point.

The explanation and analysis of your essay will then build on common ideas being discussed throughout, thereby giving the essay a coherent and unified vision. Explanation and analysis go far beyond description, and knowing why you are introducing an idea into the discussion helps you extend beyond simple description. Similarly, you might have all sorts of really good ideas, but without a clear structure, they will just rattle around like ping pong balls dropped on the floor. Examiners call these 'stream of consciousness' essays and can spot them a mile away.

TASK

- 7 Choose either the prescribed titles you will be using or past titles and 'discuss' them with your group as part of the brainstorming step. See if you can identify the main idea or ideas that the prescribed title is trying to get at. There might be more than one. If you were to write a full essay you might use that main idea / problem / issue to create the context in which the rest of your ideas would fit and be related to one another.

■ Persuasive essays

A persuasive essay is an essay which seeks to convince its reader of something. It will make a point and try to offer reasons to believe it: it puts forward an *argument*. And by argument I don't mean 'two conflicting viewpoints'. In the words of Monty Python's famous 'Argument Clinic' sketch, an argument is 'an intellectual process' or 'a collective series of statements designed to establish a definite proposition' (John Cleese and Graham Chapman, 1972). It is not simply a series of contradicting statements.

An argument seeks to establish the truth of some position or some claim, which is generally called the thesis, or the conclusion. I prefer 'thesis' over 'conclusion' as students often confuse the 'conclusion' (that which an argument is seeking to establish) with 'the concluding paragraph' (the final paragraph of the essay). In terms of the TOK essay, if you are writing a persuasive essay, you want to seek to establish a thesis which is a direct response to the prescribed title. You should be able to say the prescribed title out loud, then say your thesis and the two together should make perfect sense (though, of course, your thesis will need support!)

TASK

- 8 For a good example of what an argument is not, search for the Monty Python 'Argument Clinic' sketch online. Try to identify exactly what the customer says an argument *is* and what he says it *is not*.

TASK

- 9 These thesis statements could be thought of as direct responses to the various prescribed titles. Can you match the title to the thesis?

Prescribed title

- a *There is no such thing as a neutral question. Evaluate this statement with reference to two areas of knowledge.* (May 2015)
- b *'Knowledge is nothing more than the systematic organisation of facts.' Discuss this statement in relation to two areas of knowledge.* (May 2014)
- c *In what ways may disagreement aid the pursuit of knowledge in the natural and human sciences?* (May 2013)
- d *'Knowledge gives us a sense of who we are.' To what extent is this true in the human sciences and one other Area of Knowledge?* (Nov 2013)
- e *'Without the group to verify it, knowledge is not possible.' Discuss.* (Nov 2015)
- f *'Some areas of knowledge seek to describe the world, whereas others seek to transform it.'* (Nov 2014)

Thesis statement

- i The nature of the evidence and the role of testability of claims means that contrasting views have different effects on the overall reliability of the knowledge produced in the AOKs.
- ii While both the sciences and arts might tell us about our own nature, they use significantly different concepts and methods to do so. Ultimately, the knowledge gained in the arts is far more significant.
- iii While questions in mathematics often rely on certain axiomatic assumptions, they don't necessarily make that knowledge less reliable. How questions are posed in the human sciences, however, does directly relate to the validity of the knowledge gained from the answers.
- iv No knowledge is genuinely useful unless it is aimed at solving real-world problems.
- v In all forms of knowledge, shared knowledge plays an important role, particularly in the form of the methods and the concepts used. However, that role is significantly different in measuring the reliability and importance of that knowledge for the individual.
- vi The concept of 'fact' varies among AOKs, which suggests that the methods and scope of the AOK imposes a structure on the raw material of knowledge which may or may not be how the way the world really is.

How do you build support for your thesis? In an argument, there needs to be a number of claims which, if true, will make your thesis more convincing. These are called 'premises'. The premises should be related to one another and build on one another in a way that leads naturally to the conclusion.

Each premise will need its own support, and this is where you get into the detailed explanation of real-life examples and their analysis, showing both that you understand the nature of the TOK course and that you can create a 'cogent analysis' of the various knowledge questions involved. Your essay might have all the structure and clearly identified theses in the world, but if you don't offer strong evidence for the premises, the arguments amount to nothing. Many students offer clear, convincing but far too abstract points without showing how these ideas work in reality or testing them through appeal to illustrative examples. This suggests that the students are struggling to find real-world application of the concepts of the title, something the examiners want to see.

There is no requirement that you must convince your reader that what you say is true, but you should try to develop a compelling argument, one which is well justified and has clear evidence to support it.

The thing to remember, however, is that *you might not know your thesis when you begin the process*. Which is why, if you are hoping to create a well-polished essay, you should not assume that your first attempt at writing will be the final product. If you have broken your process into the two stages I am suggesting, then this won't be a problem. Whatever work it takes to identify the thesis and how to support it is the first stage, the second stage then is how to present it.

The best essays are generally those which have a clear purpose to them. These can be either discursive or persuasive. However, in my experience, if a student is opting for the discursive essay, he or she will too often fall into the trap of not weaving a coherent narrative out of the various discussion points: the essay ends up simply being a list of barely connected ideas. For this reason, I encourage my students to aim for persuasive essays because doing so means they will (hopefully) keep that main thesis in mind as they write, and each section of the essay will be directly linked.

Even if the essay is a discussion, students can take the main comparative point that I suggested earlier as being essential to a discursive essay and turn *that* into the thesis of a persuasive essay. Alternatively, the main thesis might be descriptive, simply identifying the main comparative claim that is going to serve as the organising feature of the essay: 'The essay title raises challenging questions having to do with reliability in the science, and I will be exploring the variety of issues pertaining this' would serve as a thesis of sorts for a discursive essay.

■ What makes a good essay?

■ What to put in the introductory paragraph

Students are often trained to include certain elements in an introductory paragraph: the thesis; some key definitions; a general idea of how the essay will unfold. This is good advice.

Remember, as a rule of thumb, the introduction should serve the same function as a movie trailer: it gives you a hint of the main characters, some indication of the central dilemma and maybe an explosion or two to catch your interest. In your introduction

then, make sure you indicate what you are taking to be the main issues contained in the title and indicate clearly the approach you are going to take. You are not writing a mystery, saving all the exciting twists for the end: tell your reader what you are planning to say and how you are planning to say it.

The introduction should be the last of the sections you finalise before you submit the essay. Go ahead and write one to begin with as this will help you keep on track, but always go back and edit it to make sure it reflects what you actually ended up saying. I have read many essays with really interesting and intriguing introductions which bear no relation to what the student actually ends up writing.

The introduction does not need to include a list of knowledge questions unless they are going to be addressed explicitly in the body of the essay, in which case it should be clearly stated why they are helpful in the understanding of the prescribed title.

TOK TRAP

One very common failing of TOK essays is listing knowledge questions at the end of the introduction, but then never addressing them again. If you are going to highlight a knowledge question, you must explain why that knowledge question is relevant to the title *and* engage with it. Do not ever offer knowledge questions as rhetorical devices.

■ What to include in the concluding paragraph

The advice is similar for the concluding paragraph: it must relate to what you have actually written. The concluding paragraph should remind the reader of what you have just argued or discussed but then also indicate (if you have not done so already) what subsequent questions might arise or what unanswered issues might still be pending. This will demonstrate to the examiner that you have something to say about how the ideas you have presented fit into a wider context, both of which will help show 'cogent analysis' and help the examiner push your grade into the higher levels.

TOK TRAP

Don't try to craft your concluding paragraph into some grand summation, or spend too many words on it. Your main effort should be spent in the body of the essay. The key is to remind the reader of the main purpose of the essay and wrap up the ideas neatly.

■ Use of counter-arguments to support your own

A well-argued or 'compelling' position is one that takes into consideration alternate positions. Taking a position on an issue means making choices, and the argument is an attempt to justify one position over another.

To strengthen your own position you can indicate what other options were available to you and why you didn't choose them. This shows your examiner both that you understand other positions and that you understand your own position's strengths over those other positions.

A good introductory paragraph will likely include ...

- An indication of why the title is important (a motive for the title). ☐
- An indication of how the writer is interpreting the title. ☐
- The primary thesis or point of discussion which will be the essay's outcome. ☐
- A *brief* summary of main reasons to accept the final outcome (a *brief* summary of your premises or main premise). ☐
- An indication of how the essay will go about answering the title. ☐
- Only things directly relevant to what you have actually written in the body of the essay. ☐

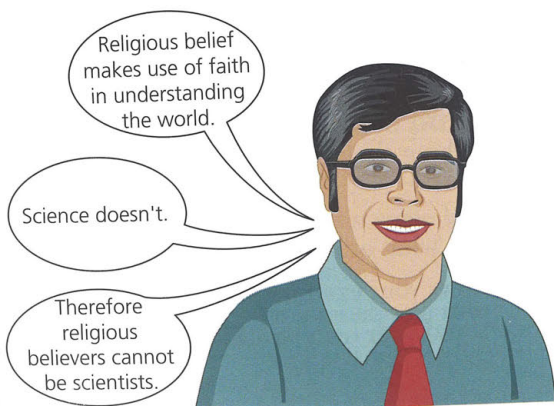
A good concluding paragraph will likely include ...

- A summary of the main points and the thesis. ☐
- Some indication of why the analysis you have offered is *important* to the title (if you have not done so in the body). ☐
- Some indication (when appropriate) of unanswered questions, or where the argument might go from here. ☐
- Only things directly relevant to what you have actually written. ☐

However, there are two important points regarding the effective use of counter-arguments to strengthen your own position:

- 1 You must offer the counter-argument in the strongest light possible. To do otherwise is to commit 'the straw man fallacy' where you offer a weak and obviously false position and say that your position is better.

Suppose, for example, you are arguing that knowledge about the origins of the universe is best explained using something like the scientific method. If you offer a counter-argument which argues that religious people never believe this because they only use religious scriptures to tell them about the physical origins of the universe, then you are not offering the strongest position because it is simply not true. There is a huge variety of religious perspectives on the origins of the universe and many of them are perfectly happy with the explanations provided by the scientific method. If you characterise the religious perspective in this weak light, the examiner will know immediately that you are not actually strengthening your own argument and will start thinking that your own understanding of the key issues and your abilities to develop a good argument around them are seriously flawed.



- 2 Once you have developed a strong version of a position counter to your own, you should engage with it. You don't want the counter-position to be left unchallenged.

If you have a choice between, say, a Keynesian approach to economics and a neoclassical approach, and you choose the neoclassical approach, then you should explain why you have *not* chosen the Keynesian approach. Yes, you get points for pointing out that there are alternatives, and *more* points for genuine evaluation of that alternative.

This is precisely why identifying strengths and weaknesses of a position is *not* genuine evaluation. Mere description would say, 'Here are two perspectives on this view.' Genuine evaluation, however, would say, 'This is an alternative position to mine that I might have chosen and it's a position which has good reasons to believe in it, *but* I'm sticking with my position because mine is better for these reasons.' An examiner might not ultimately agree with you in this choice, but explaining why you like your position and why you think it's better than others is good evaluation.

■ General ideas and suggestions for the essay

When things go well for students writing TOK essays they generally go well in similar directions. While the individual student's own ideas and unique perspectives count for a lot, there are a number of things that good essays have in common. I would recommend reading the 'TOK Subject Reports' available from your teachers as a source of ideas and suggestions for what to do and what to avoid. These reports are written after the examinations and they are the examiners' opportunity to feed back their thoughts to the TOK world. They are an excellent source of information. What follows is partly a summary of suggestions found in the reports.

■ Clear introduction

I have already mentioned the importance of good introductory and concluding paragraphs. To reiterate, after reading a good introduction your reader should have a very good idea of exactly how you are going to continue. This would include knowing how you are interpreting the title, the sorts of second-order knowledge questions you think are relevant in responding to it and the general approach you are going to take.

■ Good examples and their proper analysis

Examples are a crucial element to a good TOK analysis, whether in the essay or the presentation. They help illustrate the points you are trying to make and have the overall effect of creating stronger and more convincing evaluations. Examples, properly analysed, are an essential aspect of the assessment criteria and will help convince your examiner to raise your mark into the higher levels.

However, examples which are 'too easy' or not analysed demonstrate very little analytical skill and examiners see the same examples used again and again. The reason students (and their teachers) are using them is because they, in fact, are good examples for the TOK points they are trying to make, but the problem comes when they don't use them properly in the essay as a support for a larger claim about knowledge. Often students use certain examples as shorthand for larger points; rather than offering a proper analysis, they will just throw out a reference to something and hope that the examiner understands the allusion and makes the links for themselves.

■ Proper use of examples

What does it mean to use an example well? When students use examples well, they generally do the following:

- **There is a very clear knowledge claim that the example is meant to illustrate.** Examples are only examples if they illustrate some abstract point – in this case the point needs to be *about knowledge*. The example is both to *illustrate* the claim and also *offer support* for the claim (this is why it needs to be real and not made up).
- **The examples are well explained.** This means taking the time to explain the details of the example, but not spending too much time. It is not necessary to detail every small element of the situation or example; the only parts that need detail are the parts that are needed to help make the point about knowledge that you are working to support.
- **The examples use genuine events or concrete things in the world and are not speculative or hypothetical.** The thing with made-up examples is that they are generally made up in such a way to support *whatever* point the writer is making. No one ever makes up an example which runs counter to their point.

The most common examples of this are when students conjure up some knower from a culture about which they know very little and claim that that knower will have an entirely different perspective on some point about knowledge. The go-to favourite is some knower with a different perspective on history: 'If someone from [some other culture] wrote a history about [some event] they would have an entirely different perspective.'

While this sounds plausible (and indeed might even be true to an extent) it does not constitute genuine evidence: to be evidence, a claim has to be genuine, otherwise it only uncovers intuitions and guesses. A far more effective approach would be to actually find two accounts of some historical event and explore how the approaches are related to that historian's culture.

- **The example is well linked to the TOK point.** An example works best when it is clear why the writer thinks that it is an example of the point; in other words, the student has offered a clear answer to the question: 'Why is this an example?'

A student might claim that paradigms shift in the natural sciences, then add: 'for example, Einstein'. Examiners are all experienced TOK teachers and will certainly understand what the student is alluding to, but the idea is for the student to do the work, not the examiner. We know why Einstein offers a plausible example, but do you? A better approach would be to explain the notion of paradigm shifts within the context of a sophisticated explanation of how new evidence and mathematical modelling was making it difficult to use traditional Newtonian physics to explain new phenomena.

- **The examples are not repetitive.** Too often the same abstract point (see above) is given too many examples. It is a waste of words or time to over-illustrate a point and if you want to use more than one example for any point, you might want to vary your examples so that you are highlighting a different aspect of the same knowledge claim. If you don't need more than one example, don't waste the time.

TASK

- 10 Go through a printed version of your essay or presentation and use a highlighter to indicate all the examples you use and analyse them along the following lines:
- Are there enough of them? Are there too many of them?
 - Are you clear what general point about knowledge you are trying to make?
 - Is the example a real-life concrete event in the world?
 - Is the example speculative or hypothetical?
 - Have you described it well?
 - Have you then explained why you think it is an example of the point about knowledge you are trying to make?
 - Are you using too many examples for the same point?

■ An analysis of common examples

There are a number of common examples that are often very poorly used in essays. Sometimes they are appropriate and well used, but too often it's the opposite. I offer a quick discussion of three favourites below, both to suggest that you might do well to avoid them altogether and to give you a sense of how one might meaningfully use them.

IN PRACTICE – BOX 1

Galileo and the Church

It is certainly true that there was some tension between Galileo's claim that the Sun stood at the centre of the solar system and the Church's official stance that it was the Earth at the centre of the universe. In reality, however, the main battle lines are more blurred. Hannah Arendt in *The Human Condition* (1958) points out that the theoretical belief of heliocentrism was not new to the Church, which was happy to accept different interpretations of the cosmos: there were many of them at the time. According to Arendt, it was the empirical methods that Galileo proposed (that is, using the newly developed telescope) to find out which theories were real that was the larger threat, as this promoted sense perception as the primary authority in the creation of knowledge.

Whatever the case, the story is far more complicated than that of an authoritarian and conservative Church versus a radical free thinker. 'The Galileo Affair' is an excellent vehicle through which to explore the flourishing use of empirical observation in science, and the role of tradition, culture and technology in the construction of knowledge. But, if you are tempted to simply mention it in support of a claim such as, 'Science and faith are in conflict', then you are mistaken. First, it's simply too broad to be correct, and second you are making far too naive an assumption – neither one of which will convince an examiner that you are doing TOK well.

For further discussion see, for example:

www.catholic.com/tracts/the-galileo-controversy

IN PRACTICE – BOX 2

'People used to believe the Earth was flat'

This is the go-to example for a number of plausible TOK points, ranging from the ways our scientific understanding of the world evolves over time, to the role of sense perception in our knowledge. The basic premise, however, that people actually did think the Earth was flat is, again, too broadly stated to have genuine critical bite.

As a matter of fact, most educated people have accepted a spherical Earth since Eratosthenes of Cyrene

measured it in the third century BCE, though Plato taught this in his *Phaedo* a hundred or so years earlier. The various ways in which the circumference of the Earth has been calculated is itself a fascinating study of the historical development of geometry. Far from thinking the Earth was flat, Christopher Columbus some 1,600 years later wanted to get to India in the East – and he did so by sailing West; this only works on a sphere. Indeed, Magellan in the sixteenth century actually sailed around the whole thing!

So, yes, while it is true that some people during the last 2,400 years might have thought the Earth was flat, they certainly do not represent the accepted scientific view of the world. This interplay between scientific and 'colloquial' understandings of the world might be an interesting avenue for discussion on its own!

For further information see, for example:

www.astro.cornell.edu/academics/courses/astro201/eratosthenes.htm

www.britannica.com/EBchecked/topic/191064/Eratosthenes-of-Cyrene

http://oceanservice.noaa.gov/education/kits/geodesy/geo02_histr.html

IN PRACTICE – BOX 3

Yes, the Nazis were unkind

In a 2003 article for *Wired* magazine, Mike Godwin offered what he called *Godwin's Law of Nazi Analogies*: 'As an online discussion grows longer, the probability of a comparison involving Nazis or Hitler approaches one.' Meaning that at some point any ethical debate results in the mention of the Nazis.

My suggestion is that if Godwin's Law is true (that all internet debates result in a Nazi analogy), then TOK students would do well to avoid using the example because they are all too common. From propaganda, medical experiments and poor military strategy, all the way to disgusting racial theories, the Nazis are held up as history's bad guys. Granted, the Nazis had all sorts of offensive beliefs and engaged in a number of immoral activities, but just identifying this is not critical thought because we already know it.

If you are going to discuss propaganda, why not check the nightly news and see what the political parties near you are up to? What about certain medical experiments? Perhaps it would be more surprising and interesting to explore how the US Department of Public Health's Tuskegee Study / Experiment, 1932–1972, in Alabama treated its test subjects in the name of science? Are you exploring questionable scientific beliefs about racial inferiority? Do some reading on the growth of the early Eugenics movement at Cold Harbor Springs in New York State, USA, or explore the role of cultural beliefs in modern stem cell research.

For further information, see for example:

http://en.wikipedia.org/wiki/Godwin's_law

Again, I offer these three examples, not as a general prohibition against using them; each of these can be a fantastic example of TOK principles. I only suggest that using them without making them into good examples will, because they are so common, only highlight any of their inadequacies.

■ Use of knowledge questions

In the assessment criteria for the essay there is a reference to knowledge questions: for Level 5 it states:

'There is a sustained focus on the knowledge questions connected to the prescribed title.'

What this means for the student is that throughout the essay relevance must be maintained. Many TOK students use the essay as an opportunity to discuss all sorts of really interesting TOK ideas, many of them quite sophisticated which include compelling examples and analysis, but, sadly, are irrelevant to the title. This is a serious worry, since when the examiner believes the essay to be irrelevant to the prescribed title, the student runs the risk of getting zero for the whole thing.

This element of the assessment criteria, then, is a way to reward those students who have remained closely relevant to the title throughout the essay, making sure to clearly identify why each point is helpful in the overall analysis of the title. The knowledge questions here serve as elements of the wider analysis, not end-points on their own.

TOK TRAP

In many cases, students will conclude their introductory paragraph with a handful of knowledge questions, saying something like, 'My analysis of the prescribed title led me to identify the following knowledge questions', followed by a list of questions (sometimes even in bold!). When the student becomes focused on those knowledge questions at the expense of the prescribed title itself, problems of relevance may arise.

Whatever knowledge questions you raise *need to be relevant to your analysis of the title*. If the examiner believes that you have developed an analysis that is not relevant to the title (though it might be good TOK and relevant to the knowledge questions you identified), you run the risk of being given zero for the essay.

■ Knowledge questions do not need to be explicitly identified

Knowledge questions do not need to be explicitly identified. In many successful essays they are, but they are always explicitly related to the prescribed title. The examiner must know the answer to the question, 'Why is this knowledge question essential to the analysis of the prescribed title?'

If you don't know or can't make it clear, the examiner will begin to wonder about the relevance of your essay. These are ideas you should be working out during the planning stages and before you start presenting your argument. Some successful students don't necessarily state knowledge questions explicitly, but use them in planning to identify the underlying issues within the prescribed title, and use them in deciding how to present their ideas. The essay might use the ideas raised by asking the questions to answer the title, without ever identifying the knowledge questions themselves. The point is simply to guarantee that your discussion is always relevant to the prescribed title in a way that is clear and useful.

■ Use of WOKs

The assessment criteria suggest that your perspectives should be 'effectively linked to areas of knowledge and / or ways of knowing'.

This means that you don't have to talk specifically about WOKs or AOKs, but you can limit your analysis to some. This should be part of the first phase of your thinking – try using the WOK and AOK to develop your ideas, but remember that you are not going to have to go through all of them. Combined there are sixteen of them! When using AOKs and WOKs there are some things to keep in mind:

■ Avoid lists

One of the biggest pitfalls you can easily avoid in a TOK essay is 'The List'. When a student says, 'I will now explore the eight ways of knowing / areas of knowledge' most examiners will sigh deeply, rub their eyes and reach for the coffee, knowing that what follows will be a very long explanation of all the student's ideas about the WOK or AOK.

The TOK essay is actually not a very long essay, so trying to say anything about each of the WOKs or AOKs will result in a very superficial analysis. This is where the distinction between description, analysis and evaluation is most important. If you are trying to do too much in your essay, you will invariably end up only describing your ideas on the material rather than developing a compelling analysis or evaluation.

The secret here is to choose your AOKs or WOKs wisely, identifying a range of material which allows you to say something interesting about each of them. Don't choose more than one AOK or WOK to make the same point. Part of the first phase of thinking needs to

identify all the possible avenues of approach but then to limit the approach by deciding on which of the AOKs or WOKs you will be exploring – again, practise your ideas on lots of them, but only choose those which will allow you to make the most compelling argument.

■ **Avoid treating WOKs as if they can be thought of as stand-alone entities**

When discussing the WOK, students have for years treated them as if they were stand-alone components in the construction of knowledge, a little like a cog in a large machine. The suggestion is usually that ‘reason’ (for example) is a particular element in some area of knowledge and its effect can be measured and delineated and explained to the exclusion of all others. This is like when I open a complex machine, I might point and say, ‘There is one element and this is what it does and there is another element which does this ...’ The WOKs don’t really function like this though.

The WOKs in the process of the construction of knowledge are not things we can point to and say, ‘Oh look, this is where reason ends and emotion now begins’ or ‘We can keep reason from being overcome by emotion if we add 3.76 more units of reason’. In addition, some areas of knowledge are treated as if they are only based on one way of knowing, suggesting, for example, that mathematics is really only about reason or that Ethics is really only emotion. While it is perfectly plausible to focus on a limited number of WOKs in an analysis, you must not fall into the trap of thinking that any area of knowledge is only about one way of knowing. This is patently false or at least it’s obviously false enough to need a clear and compelling argument to the contrary.



The influence of the WOKs are like eating a cake

Rather than a cog-in-the-machine metaphor, I prefer to think the influence of the WOKs is like eating a cake. Suppose I don’t know the ingredients list, once in the cake they get all mixed up and can’t be distinguished again. So eating the cake, I might be able to make claims about the relative sweetness or consistency, and I might know that sweetness can come from sugar or fruit juice, but I also know that the other flavours mixed and react to this sweetness. All I can taste is the effect of those flavours. While some cakes will be overpoweringly sweet and moist, others might be more bitter and dry. Similar to the effect of WOKs on knowledge.

Some AOKs (or in this case, varieties of cake) might clearly be influenced in particular ways by certain WOKs, but the effect in all of them is a subtle interplay by a number of WOKs. No cake has only one ingredient in the same way that no AOK has only one WOK. For example, reason, in the form of interpretation of evidence and logical consistency and entailment, has traditionally played a huge role in the development of religious theology and religious knowledge claims. Granted, faith is certainly a key element as well, but other WOKs form a large part of the construction of knowledge in religious belief systems. My advice is to focus on the AOKs, and use the knowledge framework to explore them. Rather than imposing the WOKs, let them naturally rise out of the discussion of the AOKs and the AOK’s knowledge framework.

A good introductory paragraph will alert the reader to the emphasis of the essay (limiting the scope of the argument perhaps to two or three WOKs) but it also might try to make it clear that the student is aware of the other options available. You might, for example, introduce an argument by saying that while reason plays a key role in the development of religious knowledge (and maybe give an example), the essay you are writing will focus on certain other elements.

Another point is that often the effect of one particular way of knowing is brought about by another. For example, you might argue that propaganda is mainly about emotion, but the emotive power of propaganda is also the result of sense perception, language and memory. Again, these ideas are not the sort of thing that can be uncovered and developed properly unless you have completed the first thinking phase properly. During this phase you uncover all types of approaches and interrelationships, and then you are able to make decisions about which of them to explore. The introduction will make clear just what decisions have been made and what the limited scope will be.

■ Avoid treating WOKs as if they are themselves the focus of TOK

Exploring the WOKs in the development or construction of knowledge often makes for a strong TOK essay. However, often students will limit the overall effectiveness of these types of essays by describing the WOKs rather than exploring the effect of the WOKs' influence on the construction of knowledge. (See Chapter 1 for a detailed exploration of this.) For example, an essay exploring the limits of sense perception can make for good TOK, but the better analysis will explore the effect of the limits of our sense perception on creating scientific laws.

■ Use of AOKs

No TOK essay is complete without the explicit use of AOKs. Some prescribed titles will actually require you to discuss one or more of them explicitly, but even when responding to those titles which don't mention an AOK by name, you really should not be discussing knowledge without linking it clearly to an AOK. 'Knowledge' as an abstract concept is simply too broad to meaningfully discuss without it being contextualised.

You might say, for example, that 'personal knowledge is essential to the construction of knowledge' (as discussed in one of the May 2016 titles). This sounds plausible, but how essential the idea of personal knowledge is might depend in quite a significant way on the AOK you are exploring. For example, you might want to argue that your own personal knowledge in indigenous knowledge systems matters far less than in the arts, or indeed, *vice versa*. Whatever you decide to argue, the point is that treating 'knowledge' as if it were a thing all on its own is a mistake. You want to be thinking explicitly in terms ... in terms of, for example, 'mathematical knowledge', 'historical knowledge' or 'ethical knowledge'.

TASK

- 11** For any TOK essay that you are writing, identify when you make a claim about knowledge and see if you are making a *general* claim (something that could be translated as 'All knowledge is ...') or making a contextualised knowledge claim ('Knowledge in *this* area of knowledge is like this ...'). You want to be contextualising your knowledge claims more often than not. For any general knowledge claim, ask yourself:

- a** Is this actually true about all types of knowledge?
- b** Can I show better thinking skills by exploring this claim in the context of a particular AOK?

The knowledge frameworks are a valuable tool when it comes to making sense of how knowledge works within a particular AOK. The five elements of the knowledge framework are a way of exploring how knowledge functions quite differently in some cases depending on the area you are looking at.

You might, for example, be exploring the objectivity of mathematics and the sciences. Using the knowledge framework elements of 'Scope and applications' and 'Methodology' will give you the opportunity to ask different sorts of questions and uncover different answers. For example, you might explore how the scientific method is an attempt to build an objective stance in the sciences, whereas the objectivity of pure mathematics might come more from its scope as a discipline about universal rational principles. So saying 'Mathematics and sciences are objective' is true on a superficial and far too general level, but you can use the knowledge frameworks to explore far more sophisticated ideas and approaches.

■ Counter-claims

One of the hallmarks of an effective and convincing evaluation or analysis is the identification and exploration of positions counter to what the essay is arguing. Again, this emphasises the importance of actually having a position or a clear idea of what it is that you think. One way of exploring these counter-claims is by asking, 'If someone disagreed with me, what would they say?' Being able to convincingly articulate this disagreement is key – you want to present counter-claims and counter-arguments in a way that suggests they are good objections. Many students commit the straw man fallacy here when they don't give a convincing explanation of the counter-position.

Identification of a counter-claim or argument is not enough however. The best essays will then reply to that position. You don't want to have only a counter-argument as it may actually be quite convincing to the reader and weaken the effectiveness of your own argument. Once you have outlined the counter-position you should do your best to explain why it is that you still hold on to your own position, even when a viable alternative is available. Yes, that is a counter-position, but why don't you believe it?

This is really the point at which analysis becomes evaluation. Every position has strengths and weaknesses and pointing them out and discussing them is good analysis. But once you engage with those strengths and weaknesses and use them to explore your own position, or explain why the strengths of the counter-position still are not enough to make you change your mind, this is when your analysis becomes evaluation.

These counter-positions can be presented one by one, in a point / counter-point process, or you can present the counter-argument in its own section. The danger with the first method is that the essay tends to read like a tennis match and with all the positions being swatted back and forth, it can become a challenge for the student to maintain a clear narrative through the essay. The second method, however, requires a sophisticated understanding of the main point and means that the counter-position has to be a counter to this main position: 'Overall my position is this ...', so a counter-position would be a larger, more general counter-claim and this can be a challenge for students.

■ Counter-claim vs counter-argument

Whatever method you choose, it is worth keeping in mind the difference between 'counter-claims' and 'counter-arguments'. Counter-claims are individual claims that run counter to claims you are making. An example would be:

Claim: The human sciences can create questions that are neutral.

Counter-claim: The human sciences cannot create questions that are neutral.

Counter-arguments, however, are far more complex and require a much better understanding of the material and ideas. The counter-argument will not be formulated in a simple for / against structure, but will require a genuine exploration of an issue in a way that results in a final well-supported position which runs counter to your initial position.

So, for the example above, the counter-argument would require a fuller analysis of the nature of the human sciences, the methods they use, their objects and aims. Proper handling of a counter-argument therefore might require a separate section of the essay and will need to be properly crafted and understood prior to committing it finally to paper. These sorts of responses where the counter-argument is presented and replied to convincingly tend to be the types of things that the best essays can do well.

■ Evidence of personal approach

Showing a personal approach is integral to a good TOK essay. The distinction between personal knowledge and shared knowledge was one attempt to help students approach this issue of the 'knowers' perspective' or the 'personal approach' in a way that avoided the common approach of offering anecdotes about knowledge. Still, this is sometimes a challenging thing to do well.

You are encouraged to draw on your own experience as knowers, and this will certainly give your essays a personal tone. When using your own experience, you will want to make sure that your anecdotes don't become the focus of the essay, however. Just like in the presentation, the specific examples used in your essay should be developed in terms of the more general or decontextualised questions about knowledge that they are meant to raise. Any failed experiments in chemistry, or individual research for your history Extended Essay, or explorations that you conducted in your mathematics class must point to some 'decontextualised' knowledge question that you are exploring. An essay full of anecdotes is unlikely to do well.

In a good introductory paragraph, explore a handful of well-developed examples (even though they might not have anything to do with you, personally) or offer unexpected conclusions. The presumption that ethics is more subjective than mathematics, for example, will come as a surprise to no one, but the student who emphasises the subjectivity within mathematics, or makes some attempt to explore the objective side of ethics will immediately raise the interest levels of the examiner.

■ Be very wary of 'help' websites

Every year there are more and more online TOK 'help' websites which promise advice on how to proceed with the particular essay titles. It is not at all certain, however, that these sites give out consistently good advice. The IB takes plagiarism very seriously and

is well aware of the sites and the type of advice they give. If they identify an essay which is clearly not the work of the student, that student runs the risk of falling foul of the academic malpractice rules and might lose his or her entire diploma. This is not a risk worth taking.

The best sources of advice and guidance are your teachers. They have the experience, can identify useful resources and will help you to negotiate the troublesome issue of using sources appropriately. They are also professionally obligated to help you develop your own ideas and they take this obligation seriously: they won't write your essay for you!

Examiners are trained to identify where students are succeeding and to award points accordingly, so even when a student is genuinely struggling, but nevertheless making an honest effort in the essay, that student can do well against the criteria. If, however, the student struggles and uses information inappropriately, this may constitute malpractice and could be punished with a loss of the entire diploma.

Help websites come in a variety of types. Some are general TOK sites whose content is designed to help you develop as TOK students, not to give you answers to specific titles or tell you the 'right' ideas. These sites are less harmful and pose no more or less of a worry than any TOK textbook. If you use ideas from these sites, just be sure to reference them and use them wisely.

Some sites, however, promise to 'unpack' the titles for you or work on your essays or ideas with you for a fee. These can be more problematic as they might have their own commercial desires at heart over your own learning or success.

My advice is simply to make the best use of your own teachers or, whenever in doubt, ask your teachers about advice from a website. Follow your teacher's lead when it comes to unpacking ideas and exploring strategies and go to your own teacher if you are struggling. They know you and they have the experience you can trust. Think of faith as a way of knowing ... in whom should you be placing your trust.

While there is a lot to consider in this chapter, paying attention to some of the main ideas will not only help you both deal with the stress of writing such a challenging piece of work, but also to lead you away from some common problems and hopefully lead you towards a stronger essay. While it might sound rather sad, the time spent with students as they work on their essays are the most rewarding of my time as a TOK teacher. These are difficult things to write and genuinely stretch all students; invariably they think thoughts, develop arguments, take positions and uncover complexity in their world in a way that, in my view, no other aspect of the IB encourages. Students of all abilities will have their *best* thoughts when working towards this essay. (Unless they do it the night before the deadline. Then it's only a matter of luck. Don't be *that* student.)

■ Breakdown of the assessment instrument

The 'assessment instrument' is used by the examiners to judge your essay. It is broken into two main 'aspects':

- 1 Understanding knowledge issues.
- 2 Quality of analysis of knowledge questions.

Below is a summary of the Level 5 descriptor for each of the sections with some advice on how the top level can be achieved.

What can you do to help show that you are meeting each of the elements of the assessment instrument?

■ **Aspect one: Understanding knowledge questions**

- Sustained focus on knowledge questions connected to the prescribed title
- Choose relevant and clear knowledge questions that are directly related to the analysis of the prescribed title.
- Be able to explain how the analysis of these knowledge questions serves the analysis of the prescribed title.
- Maintain clear relevance to the prescribed title throughout the essay.
- Make clear and explicit connections between knowledge questions used to analyse the prescribed title.
- Investigation of different perspectives and link effectively to areas of knowledge and / or ways of knowing
- Explore a well-chosen range of approaches to the prescribed title.
- Create clear and explicit links to AOKs.
- Use WOKs carefully to explore the complexities of knowledge within the context of an AOK.

■ **Aspect two: Quality of analysis of knowledge questions**

- Arguments are clear
 - Develop and maintain a clear narrative or argument throughout the essay – the examiner must know at each stage what is happening in relation to the title.
 - Develop clear justifications for all smaller discussions of premises.
- Supported by real-life examples
 - Do not use hypothetical examples or speculate about what other people would or might say unless you can explain why you are an authority on the subject.
 - Fully explain the examples, particularly why they make a good example or illustration of the point you want to make.
- And effectively evaluated
 - Test your own arguments by exploring what others might say (or do say) in disagreement.
- Counter-claims are extensively explored
 - When exploring what others say in disagreement, make sure you are offering the strongest versions of those counter-claims or counter-arguments and engage with them, explaining why your view is still your view despite there being these other points available.

■ Implications drawn

- Make sure you are exploring either or both the assumptions hidden within the title (what the prescribed title 'implies') or what the effect of your views are.

■ The essay Planning and Progress Form (PPF)

The paperwork associated with the essay is called the PPF and stands for 'Planning and Progress Form'. The form asks you to record the three 'interactions' with your teacher that the Subject Guide requires. It is meant to serve two purposes:

- 1 To provide evidence that the work is your own.** Your ideas will shift and develop over the course of the thinking about and writing of your essay. The three interactions are meant to chronicle these stages so that, in the event of a worry about plagiarism or academic malpractice, the PPF can show how the ideas developed over a long period of time. The PPF includes a teacher section where your teacher will comment on the process to add evidence that the final work is your own (or they might say that they cannot fully vouch for the authenticity if you have changed your title suddenly).
- 2 To provide a framework to promote the independence of the student.** In other words, there are three formal interactions so that there are not four or five or a dozen. This means the teacher cannot develop your ideas for you. You must take responsibility and show genuine independence so the work that is produced and assessed is genuinely your own.

The Subject Guide offers guidelines on the nature of these interactions but they generally follow the structure:

- 1** Initial discussions and choice of prescribed title.
- 2** Some sort of essay plan.
- 3** A lightly commented upon draft.

If you follow the two-step process and have a clear argument, then your middle interaction will be quite substantial, but you cannot show your teacher more than one essay. The 'plan' mentioned as the second interaction cannot be a full essay! This is partly why the distinction between an argument plan (abstract identification of key elements of the overall argument) and the essay draft (a presentation of that argument using the traditions and conventions of essay writing) is so crucial. If you arrive with the 'argument plan' and it really is just a draft essay, you have lost out on one of the allowed interactions.

Similarly, if you have already had two of the three interactions and suddenly take it upon yourself to change the title when it comes to writing the draft, you don't necessarily get another three interactions. In most school situations there simply is not enough time (and it's not in your best interests for the school to give you the time) to take more and more runs at the essay. If you have changed the title and written a draft, then your teacher has not seen the ideas develop over time and cannot fully vouch that the final product is your own.

Filling in the PPF is not onerous. Your school will identify how the three interactions will proceed and after each of them simply chronicle: what happened during that interaction; how things were going; what ideas were discussed; and how you plan to proceed. Your teacher then will offer a comment as to the overall process and the independence and authenticity of your ideas. No examiner ever sees the PPF.

The presentation

■ Specific advice

Of course, the major difference between the presentation and the essay is in the method of presenting your ideas. The rules and advice which are relevant to a successful essay are significantly different when it comes to a presentation. The differences in this case mean the challenge ‘faced in the presentation’ by the presentation is a strong one. Whereas in an essay there might be room for some weaving around the focus, in the presentation students have to be extremely precise in their analysis. There is simply not enough room to spend time circling around the main issues – you have to get to the point and stay there! In my view the need for the two-step process is most pronounced here: you must know what you are going to do, before you decide how best to do it.

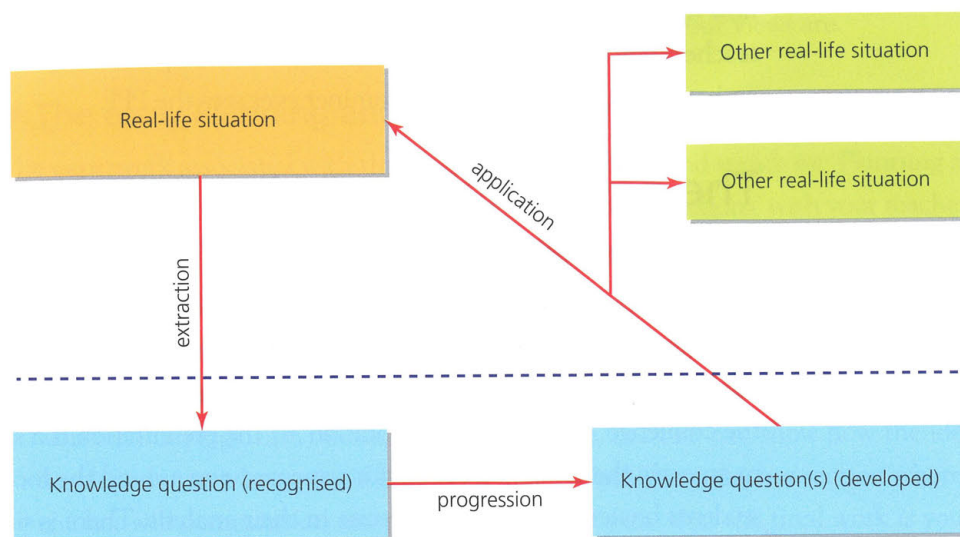
That being said, much of what I have been stating about the essay can be applied to the work you do in the presentation. They are quite distinct in outcome, but they are both meant as opportunities for you to show your TOK thinking skills. What I have said above about the personal approach, for example, the development of counter-arguments, and the proper use of WOKs and AOKs all need to be kept in mind when developing your TOK presentation.

The primary assessment question for the presentation is: ‘*Do(es) the presenter(s) succeed in showing how TOK concepts can have practical application?*’ (page 63 of the TOK Subject Guide). This means that rather than being an abstract conceptual analysis, the presentation is an assessment of the practical applications of TOK. The whole point of TOK is to become more reflective and critical in genuine, real instances of knowledge construction in the world. This means that the primary elements in your presentation are focused on the real-life situation and the knowledge question. Whereas in the essay you are exploring elements of second-order knowledge in the service of the prescribed title and are illustrating them with real examples, here you are analysing a real-life situation using a TOK analysis. Think of it as a ‘practical experiment’ rather than a theoretical analysis.

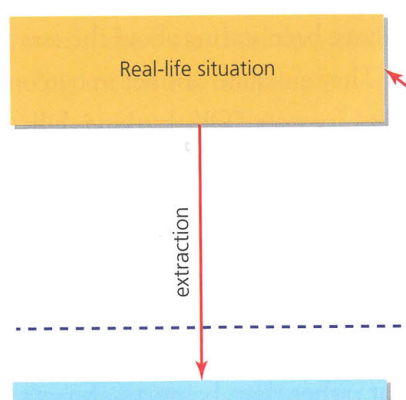
So just what do we mean when we talk about real-life situations? The Subject Guide offers a diagram which might be helpful in thinking about the various elements the presentation should have.

This diagram is not necessarily suggesting how the presentation must proceed in terms of sequence. Presentations certainly can follow this step-by-step process and there are good reasons to think of it in this way. But really what the diagram is showing are the elements that a TOK presentation should have – it shows the type of thinking and analysis that needs to occur; how you weave this thinking into a presentation is up to you. If you have developed a two-step process as suggested in this chapter, these elements should already be

developed before you think about how to sequence the ideas. My suggestions that follow can be thought of as the unpacking of the various elements.



■ Real-life situations



Real-life situations in the TOK sense are those moments when you are suddenly struck by a second-order question about knowledge. How do we know that? What evidence do I have for thinking this is true? How do I know that this is a justifiable claim? These questions are exactly the sorts of questions that the TOK course is both meant to encourage you to ask, and to help you answer. So if you feel that the TOK has made you more confused in relation to these types of questions then in that first sense it has done its job. I hope it has also given you tools to help you answer them!

In my experience, real-life situations are not a huge stumbling block for students; many things work fine. Students go wrong with real-life situations when they choose something hypothetical, a circumstance or a general issue rather than something specific. For example, you can't really develop a clear analysis from 'the gun debate' or from 'the writing of history textbooks' or 'the use of Photoshop' as these are broad concepts or general issues, they are not specific, concrete, real situations. It would be better to find a specific editorial piece in a newspaper which deals with gun control, a particular passage in your own history textbook, a specific image or a speech by a politician and extract from that the questions about knowledge you have.

A good real-life situation could be about some specific and concrete event: this could be something quite personal to you, like a moment in your own learning when you were constructing knowledge in a class. Many students explore the knowledge questions relevant to their own Extended Essay research, the work they do in their internal assessments or even the knowledge they develop through their CAS programme. A good real-life situation could also be something impersonal, like a moment from the historical development of an AOK (such as a famous experiment, or paradigm shift). The point is that the real-life situation just needs to be something specific and something about some dilemma or issue in the world of knowledge.

Whatever real-life situation you choose, it should be something that interests you or something that jumped out at you and made you think or wonder about knowledge. Avoid real-life situations from textbooks (including this one!); examiners are well aware of the wealth of material out there and find that too many other students are already using those same examples.

Finally, choose a situation with which you are familiar. I recently heard a presentation from a student who wanted to explore the role of myth in the construction of historical knowledge. She chose as her real-life situation her reading of Greek myths surrounding the origin of the Olympic Games (it was an Olympic year) and her analysis explored the role of these myths in our historical judgements about modern Greece and Turkey. However, the student was neither Greek nor Turkish. She was native Vietnamese, so from another culture with its own rich mythological tradition. Nothing was wrong with her choosing to focus on the mythology of early Greece and Turkey, but I wondered whether she missed an opportunity to explore her own background in a way which might have broadened the opportunity for her to explore her own place as a knower in the world. Personal knowledge is, after all, a key element of the course and students should be encouraged to use the course to explore their own understanding and experiences as knowers. She might have started her planning with the Greek myths, but she could have searched around for myths relevant to her own background and found one from which to extract the same knowledge question.

TASK

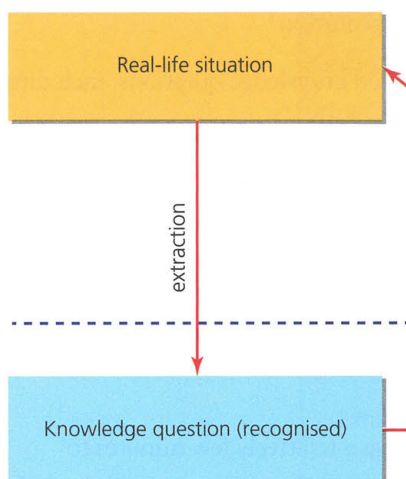
- 12 Throughout your TOK course, you will be exploring questions about knowledge through a number of examples. Keep an electronic file, (for example, Word, Google Docs, OneNote, Evernote) where you record these examples. For each of the examples, write a paragraph or two of what the knowledge issues pertaining to it are, and some analysis. Keep track also of which ideas are your own and which are others' (perhaps using a different coloured pen or font). When it is time to create your presentation you don't want to suggest other people's ideas were your own! When it is time to try to find a real-life situation, this file will be enormously helpful.

Here are some examples of real-life situations, in the form of TOK Bingo!

Two roads diverged Conflicting hypotheses in a discipline	In black and white The textbook is wrong	What makes you think that? Getting your teacher to discuss why they think they know something
The stories we could tell An example of a paradigm shift	Word play 'It depends on the definition of ...' or 'It depends on what you mean by'	Big Brother Next Door A current and local example of propaganda
A thousand words Graphs that colour knowledge rather than illustrate it	Nice try An example of accepted knowledge changing over time	'Never doubt what nobody is sure about' An example of doubt driving research or knowledge
Unknown unknowns A teacher suggesting that some 'fact' is not definitive	'There is no spoon ...' An example of the senses leading us away from knowledge	Freedom fighters or terrorists? An example of language affecting how we know things
Trust me, I'm a scientist Simply suggesting 'science' has justified some fact	Intruder alert An example of one subject/discipline using knowledge from another subject/discipline	Back in my day ... An example of knowledge relying on memory
Overcome by emotion Someone suggesting that emotion is not a good source of knowledge	Now that you mention it ... A claim which you thought was certain, turns out not to be	Because I said so ... An example of knowledge based on authority
'We are the dreamers of dreams' An example of knowledge relying on imagination	The truth is out there 'Pseudo-science' being offered as 'real' science	Known unknowns Unanswered questions driving a discipline
'He who mistrusts most should be trusted least' An example of knowledge relying on faith	'Hey ref – what game you watching?' Different interpretations leading to different theories	Twisted tongues Language was used to twist an argument
Is it art? An example of art in a 'non-artistic' discipline	Yeah, right A poorly justified interpretation	Sheeple People think something is true because it's 'common', accepted, part of the status quo
Blinded with science An example of science being biased	Wait ... what? An example of a logical fallacy	Clever counting Statistics are manipulated in favour of a particular conclusion
To the victors An example of history being biased	A cute angle An example of beauty in mathematics	And ...? Something that is 'true' but has little relation to reality
Wait a minute ... Facts being presented – but 'there's more to the story'	How did we get here? Reason leading us astray	'Computer says no' Facts unavailable except through technology

■ Knowledge questions in the presentation

I have already discussed the nature of knowledge questions in Chapter 1, but it is worth mentioning them again here in the context of the TOK presentation.



Once you have decided on your real-life situation you must now extract a knowledge question from it. This means that you must identify some question about knowledge that is related to that situation. The situation itself might not be directly engaged in knowledge, but it is enough for you to find a reasonable connection.

You might, for example, have read about how, in 2004, the European Space Agency sent a space probe called *Rosetta* to land on an asteroid and wondered, 'How on earth does someone know how to do that?' or 'How can the *New Horizons* spacecraft get fired into space and nine years later meet up with Pluto, some five billion kilometres away when I can't even find my classes at the beginning of the year?' You might have then started thinking about what you learned in physics about trajectories and all the mathematics required to work them out. Suddenly, now you are in the neighbourhood of a good knowledge question, having to do with the interplay between mathematics and physics. What is it about mathematics that makes it such a fantastic tool for working out complex physical phenomenon, such as sending spaceships all over the solar system? What do you need to do then to translate this question into a good knowledge question?

TOK TIP

The choices of your real-life situation and of the knowledge question you extract from are likely going to be made in conjunction with each other. You might have an interesting real-life situation, but can't figure out a knowledge question to extract, or you might have an interesting knowledge question you want to explore but can't find a real-life situation to illustrate it. Choosing them might be a sort of process of negotiation. This is fine too.

Knowledge questions are necessarily general or decontextualised. This means that they are incredibly broad and there are as many different approaches as there are students thinking about them. You only have a limited amount of time in a TOK presentation, so you will have to place some boundaries on the analysis of the knowledge question you have chosen.

My advice is to think of it like the zoom on your camera. First you are looking up close at something very concrete and specific in your real-life situation, then you zoom out to get a general and decontextualised knowledge question. For the purposes of your ten-minute (or more if you are in a group) presentation, you will want to tighten that perspective again somewhat, perhaps limiting it to a particular area of knowledge or an element of the knowledge framework (both generally more interesting than limiting it to a WOK). But whatever the case, your knowledge question should *not* make direct reference to the real-life situation – the real-life situation is an illustration of the question about knowledge so the knowledge question must be broader than the real-life situation.

For example, you might be interested in the following concrete event. In your literature class you read summaries of two writers who had quite different views on the meaning of T.S. Eliot's use of sea-imagery in 'The Love Song of J. Alfred Prufrock'. You wonder just how two intelligent and well-educated literary critics can come to different conclusions about the same material. Is there a 'right' or 'better' interpretation?

From this you might construct a number of decontextualised knowledge questions, including:

- *When constructing knowledge what methods are available for determining what is 'true' or 'better' knowledge?*
- *How can we determine what is the right interpretation of evidence?*
- *What is the effect of an interpreter's education on his or her knowledge claims?*
- *How does one determine what it takes to be an expert in an AOK and how might this influence the development of knowledge in that AOK?*

In the context of your presentation, however, you only have a relatively few minutes to explore your ideas so you should zoom back in a step or two to tie your very broad knowledge question to a particular AOK or two, or even to some element within the knowledge framework. You might then finally arrive at a decontextualised knowledge question with elements specific enough to meaningfully explore in the context of a presentation.

- *'When constructing knowledge what methods are available for determining what is "true" or "better" knowledge?' might become, 'In what ways can the methods employed in the natural sciences and arts help adjudicate between competing knowledge claims?'*
- *'How can we determine what is the right interpretation of evidence?' might become, 'In what ways do literary critics use evidence and does this result in knowledge that is more or less reliable than in history?'*
- *'What is the effect of an interpreter's education on his or her knowledge claims?' might become, 'What does it mean to be qualified to make knowledge claims in the arts and how does this impact the reliability of the knowledge claims made?'*

Note here also that the WOKs have played no part in the formulation of the knowledge question, though their introduction and discussion would be entirely relevant in the analysis of any of them, but beware of treating them as discrete entities. All AOKs will use a variety of WOKs, so don't develop an analysis which suggests that some AOKs only use *one*.

This process of first zooming out (decontextualising) then zooming back in a bit again is a sign of good *analytic* and *evaluative* skills and you can make this explicit to your teachers by explaining perhaps what choices you made and why you chose to focus on one area of knowledge rather than another. This suggests that you are aware of alternative positions and perspectives, but have reasons to choose the position you did.

The presentation should focus on **one** knowledge question. If you don't think there is enough material in the formulation of your knowledge question to create a presentation of the length required, then it might not be well formulated. In the essay, students will often identify more than one knowledge question in order to explore the prescribed title, but in the presentation any time you use to uncover 'subsidiary' knowledge questions is only time not being used to analyse the primary one. It might be a good idea (as in the 'other' real-life

situations discussed above) to highlight what other knowledge questions are related, but take care not to allow your analysis to devolve into a 'list of' knowledge questions. Any other knowledge questions that you do introduce must be tools in the analysis of the primary one.

IN PRACTICE

Choosing a knowledge question

I thoroughly enjoy reading through PPDs and working with my own students as they come up with interesting and sophisticated knowledge questions that I have not seen before. Often though, students find choosing their knowledge question a genuine challenge.

Advice for choosing a knowledge question

- Make a mind-map of all the topics you have found interesting in your classes. Compare these to the knowledge framework for that AOK. Are there any questions which you think capture your imagination the most? Remember though, while you might have found the first-order content interesting, the TOK presentation must develop these ideas in a second-order fashion.
- If you have already chosen your Extended Essay topic, take some time to develop a TOK analysis of that topic and your research. How do you know your work is reliable? How credible or reliable are the sources you are using? What are the reasons behind any varying perspectives by scholars on your topic? This exercise can be beneficial in two ways: first, it helps you understand your material better and write a better Extended Essay (even if this new material doesn't appear in the final version), and second, it might help you uncover a good knowledge question.
- Ask your subject teachers (including your TOK teacher). They might have advice about the sorts of things that have interested you most in class. Perhaps you forgot about a particular discussion or topic, but your teacher might remember a point you made or a conversation you had which lends itself to a TOK analysis.
- Look through old essays or work from all your classes. Reading through your old work will not only help you revise, but it might also uncover a point that you made that would work well for a TOK presentation.
- Consider your IAs. In a similar way to the Extended Essays, the work you do in your Internal Assessments needs to be rigorous and credible, so an analysis of the way you are using research and constructing your own knowledge is worth an exploration. This might uncover a topic or an issue you would like to discuss in a presentation, or at least one which would work well for a presentation.

■ The presentation's analysis

The TOK Subject Guide's presentation diagram (Figure 19 on page 55) offers two 'levels', suggesting that they represent the students' experiences in the TOK course (lower level) and in the world beyond it (upper level). The connections between the levels demonstrate the relevance of TOK to life beyond the TOK classroom (page 56 of the Guide). The upper half of the diagram is meant to represent the real world of knowledge: people trying to construct knowledge in their various disciplines. These are the first-order questions: physicists asking questions about the physical make-up of the world, artists offering critiques about poems, paintings and so on, psychologists exploring reasons why people behave or think the way that they do.

The lower level of the diagram is where the second-order analysis occurs – this is the world of the knowledge questions and the knowledge framework. *The primary focus of*

your TOK presentation is to develop an analysis relevant to this lower level world. While you are meant to be applying your TOK understanding to the world, the majority of the analysis of the presentation should be taking place at this level: unpacking the knowledge question, exploring it and developing outcomes about knowledge which you can then apply to the real world. One of the genuine challenges for students is to avoid over-describing or over-analysing the real-life situation (upper level) and not give adequate analysis at this lower level. This is where, for example, students who get caught up in the specifics of an ethical dilemma get caught out – they use the presentation to explore the first-order question of whether *some behaviour* is right or wrong and never drop below the line into an analysis of how it is that *ethical knowledge* is constructed. If the presentation is *about* the real-life situation, you are not showing an ability to develop the second-order TOK skills necessary for an application to the real-life situation.

This second-order analysis should result in clear *outcomes*, claims about the nature of knowledge, its construction or acquisition in the context of an area of knowledge that can then be meaningfully applied *back* to the real-life situation. In other words, you raise a question (the real-life situation and the knowledge question), then you fashion tools to answer the knowledge question (the presentation's analysis and outcomes), then you use those tools to revisit and explore the real-life situation.

TASK

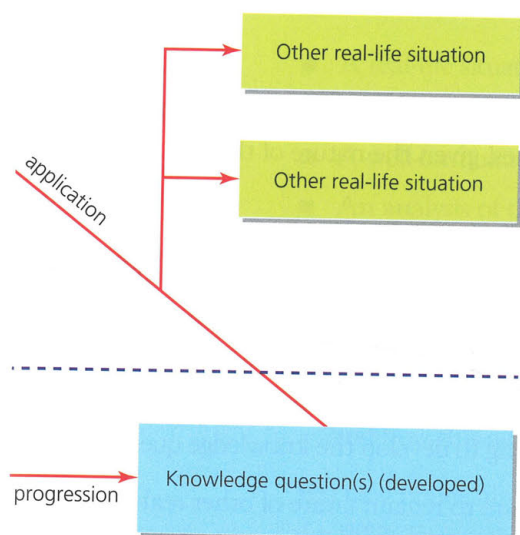
- 13** If you have developed a script of any sort for your presentation, or a list of notes, colour-code those notes in the following manner: red for points or comments *about the real-life situation* or other first-order claims and green for when you discuss *the knowledge question* or any second-order claims about knowledge. Your notes or your script should be heavily weighted towards the green. If not, then you are talking too much about the first-order issues of the real-life situation and this is not what the presentation is about.

For example, if you are looking at the recent 'debates' about the relationship of vaccinations and autism and have extracted from this the knowledge question, 'What impact has the internet had on the acceptance of knowledge claims in the natural sciences?', the bulk of your presentation then explores this notion about knowledge and the role of experts or research and peer review or something similar (but not autism or vaccinations). Your outcome culminates in the claim that education in a particular field is crucial to making justified claims in that field. You might use this outcome to *return* to the real-life situation where you show that much of the 'debate' has come from people not actually well educated in the natural sciences and that the internet has given unfettered and equal access to scientific and unscientific claims about vaccinations without any of the vetting processes inherent in genuine scientific research. In short, the internet seems to have made *everyone* an 'expert' in this field, and the debate has become muddled as a result.

This is not necessarily to say that you cannot mention your real-life situation during the main analysis of the knowledge questions. You might make reference to it as a way of grounding the discussion in reality. The point is only that the analysis needs to be about knowledge, not (in this case) autism or vaccination.

IN PRACTICE

Keeping the need for genuine second-order analysis in mind is particularly important when it comes to filling out the TK/PPD form. In the 'Outline' section of the form, students must include material that is clearly aimed at second-order questions. In other words, you must be offering evidence that you are offering a genuine TOK analysis. If the moderator sees nothing but a description of the real-life situation, then he or she will have little evidence that the presentation was actually out to explore questions about knowledge.



■ Other real-life situations

The presentation assessment criteria ask your teachers to evaluate the extent to which you have been able to show how the outcomes of your analysis have significance for your real-life situation 'and to others.' The idea is that, if the knowledge question is properly *general*, it will be something that can be explored through the context of a number of different real-life situations. This is an opportunity to explore the outcomes of the analysis you have just offered in the context of some of these other real-life situation. Using the autism vaccination example, while your outcomes about the question pertaining to educational 'expertise' have been shown to be relevant to your real-life situation about vaccinations, you might also link this to another real-life situation, perhaps about the weighting

we should be giving to uneducated judgements about art ('Is Banksy really any good?') or politics ('Should the UK have left the European Union?').

You have a real opportunity here, however, to show some genuine depth to your understanding of the issues at stake. My advice to students is to choose another real-life situation that brings out another facet of your analysis. If you are choosing another real-life situation which is entirely similar to your initial real-life situation, then nothing new is happening in applying the outcomes to this new situation. This doesn't really show a flexibility of thinking. You might try to apply briefly the outcomes to another related AOK, for example. The idea is not to launch into an entirely separate analysis, but to just concisely explore your outcomes in a new context or hint at how the same analysis can shed light on other issues. But a new context should carry with it a new facet – something new should be learned.

TASK

- 14 During the development of your presentation, keep a list of what other real-life situations you think could be used to explore your knowledge question. Highlight those that are different enough from your original that you might have to change the analysis slightly. These might be candidates for the 'and to others' element of your TOK presentation.

■ The two-step process

In the opening section of this chapter, I suggested that the two-step process is relevant for both the essay and the presentation. This is true, but I would add that this is doubly true for the presentation. The constraints of a short presentation mean that the ideas have to be surgically precise and any waffling or deviation from a well-constructed approach will mean that the presentation will suffer greatly. If you add irrelevant material, or if you start from a poorly formulated knowledge question, there is little hope of bringing your work back on track. This means that you must put in a significant amount of work before you even start to think about what goes on your first slide.

■ Deciding what to think

The steps to working out what you think in the presentation are pretty much the same as in the essay, but with a few important differences, given the nature of the task.

■ Step 1: Brainstorming task

Whereas in the essay the brainstorm has a definite starting point (a prescribed title), in the presentation it is up to you to develop the knowledge question you are going to analyse or answer. This means that your brainstorming session has to first explore general issues or possible real-life situations that interest you until you arrive at a knowledge question. Then the brainstorm has to focus on how you are going to develop the knowledge question.

Throughout these brainstorming sessions, be sure to remain aware of other real-life situations you might use. The objective of this session is to identify a real-life situation and a knowledge question, know how they relate and develop a number of ideas about how to develop the knowledge question.

■ Step 2: Beginning to write

After making a decision about which real-life situation and knowledge question pairing to work with, my suggestion is to write about it. Even though you are going to offer an oral presentation of your analysis, you should still write out your views and ideas. Just like in an essay, attempting to articulate your ideas in writing is a good way of learning what they actually are, identifying strengths and weaknesses and exploring counter-claims. Writing them out is also a good way of learning the material so you will be able to present them without using a script.

■ Step 3: Making decisions

In a perfect world you will have developed far too much material for a short presentation. This step then is crucial. You must make very clear decisions about what material is immediately relevant to your knowledge question's analysis and what to include in the actual presentation. Once you are beginning to make decisions about how to present the material to your teachers (the second stage of the overall process), you might need to return to this stage if you have cut too much material so don't get rid of your notes!

■ Step 4: The argument plan

As with the essay, you are better off thinking of your analysis as an 'argument', one in which the outcomes of the knowledge question's analysis form the conclusion. The culmination of your thinking phase (not the presentation phase) then should be

adequately captured in something like an argument plan. What is the final answer to your knowledge question? What points are needed to justify this answer? How are the outcomes/answers applicable and relevant to the original real-life situation and other related real-life situations?

If your planning has been thorough and culminated in an argument with easily identifiable elements (conclusion/outcome, premises, application, and so on) then the work you put into filling out the PPD will be far more simple. This is explored below.

So, in summary, before you even *begin* to think about *how* to present your ideas you should have developed the following:

- A real-life situation which is concrete and can serve as a good starting point for a TOK analysis.
- A well-formulated knowledge question.
- An analysis of that knowledge question which culminates in an answer to the knowledge question – the ‘outcome’ of the analysis.
- An understanding of how that answer or outcome can be applied to the real-life situation for greater understanding of it.
- Other real-life situations to which the analysis of the knowledge question can be applied and how this adds further depth to your understanding of the knowledge question.

You may notice already a striking resemblance between these elements and the sections of the PPD. This is not a coincidence!

■ Deciding how to present

Now that you have completed the hard work, the fun work is about to begin: deciding how you are going to present these ideas to your audience. The TOK presentation can take any form: it can be a dramatic skit, it can incorporate costumes, it can avoid entirely any form of ‘slide presentation’, it can include video, class exercises, audience participation or whatever you can think of. There are really only two things to keep in mind:

- 1 **You cannot read an essay.** Of course you can hold and refer to note cards, but you cannot stand and read from them. If you are reading, your teacher might stop you and give you some time to collect your thoughts until you can actually present your ideas without reading.
- 2 **You must communicate your ideas clearly and compellingly.** At the end of the day you are providing a mini-TOK lesson to your audience, so if they can’t understand your ideas about TOK then you have not presented them well. While your presentation skills are not being assessed, you do have to present well enough to get your ideas across and for them to be understood.

Whatever form your presentation takes you have to make sure that the presenting of the ideas doesn’t diminish the message you are trying to get across. You and your ideas are the presentation, not the slides, not the costumes, not the essay, not the skit. The assessment of the presentation does not make reference to the presentation skills: the ideas are being assessed, not the way in which they are presented. That being said, a high-scoring presentation is one in which the ideas are clear: if your teacher has missed your point (or

if you have forgotten to include it) you won't do well on the assessment. The points you want to make might be there, but if they are buried in some vertigo-inducing 'Prezi', or lost between clever transitions between slides, or hidden between the lines of a staged debate or covered up by costume, then the presenting of your ideas cannot be said to be successful.

Often the most straightforward and easiest to manage approach to the presentation is a stand-and-talk approach, supported by slides. But this is not often the most compelling or imaginative. Many of the best TOK presentations I have seen had no slides at all and some of the worst had too many. I have seen presenters take turns speaking and mind-mapping the ideas on the room's whiteboard, I have seen videos successfully incorporated (but using other people's videos does not count as your material so should not count towards your time). I have seen togas, tuxedos and top-hats. I have seen students just standing and talking. I have seen questionnaires filled out at the beginning then analysed later as part of the presentation. I have seen magic tricks and dog-tricks (on a video). Some presentations follow the TOK Subject Guide's diagram with complete devotion, some strike off in all manner of directions.

There are innumerable ways to present your ideas successfully and compellingly. How you decide to present the ideas you have developed is an opportunity for creativity and a bit of dramatic flair. Part of what the IB wants to achieve through the use of oral presentation assessment in the Diploma is to develop expertise in the act of presenting your ideas orally: so take the opportunity to develop engaging and interesting presentations. It might be a real challenge if you are not the sort of person who likes it, but remember, in the case of TOK, your presentation skills are not what is assessed so don't worry (too much). Just make the ideas clear and enjoy it!

■ The three interactions of the presentation

Like the essay, the TOK Subject Guide suggests three 'interactions' relative to the presentation and for the same reasons: both to guarantee the authenticity of the work and to promote student responsibility and independence by limiting the amount of help the teacher should offer. The presentation's interactions, however, are not recorded formally. The suggested structure of the three is also similar to that of the essay:

- 1 Initial discussions about the choice of real-life situation and knowledge question.
- 2 A discussion about the general argument and development of the ideas (not required).
- 3 A very general discussion of the format of the actual presentation.

■ PPD

The paperwork required for the TOK presentation is called the TK/PPD: the Presentation Planning Document. This form must be filled out in full prior to your presentation. The form is designed for two purposes: first, to help you plan your presentation; and second, as the primary tool for TOK moderation (explained below).

Textbooks don't generally give advice on how to fill out the IB paperwork associated with the course, but in the case of the PPD, filling it out properly is crucial to securing the mark your presentation deserves. If you don't record your planning effectively then it could jeopardise your final marks, opening it up for your teacher's marks to be moderated up or down.

The PPD is broken down into a number of sections and specific advice for filling out each element is included below.

- **Describe** your real-life situation.
- **State** your central knowledge question (this must be expressed as a question).
- **Explain** the connection between your real-life situation and your knowledge question.
- **Outline** how you intend to develop your presentation, with respect to perspectives, subsidiary knowledge questions, arguments, and so on. Responses can be presented in continuous prose or as bullet points.
- **Show** how your conclusions have significance for your real-life situation and for others.

The two-step process outlined above is partly designed to follow the general structure of the elements of PPD. If you have constructed a genuine argument, you will be able to place the relevant elements of the argument easily into the PPD. As you will see from what I have said above, the PPD is a genuinely useful planning document, but it does require you to have developed the ideas prior to filling out the form. Each of the PPD's sections are meant to capture the content of the ideas that you were developing within the various steps of planning (formulation of real-life situation and knowledge question, the outline of the argument and the application of the argument to the initial real-life situation and to others). If you have done your planning well, it will be no effort at all (aside from perhaps simply cutting and pasting material) to fill out this form. The key thing to remember in filling out this document is to include genuine content, especially in the 'outline' and 'show' sections, for the reasons discussed below. As a planning document though, if you are able to differentiate the content for each of these sections, then you will know your material well. Keep the PPD handy as you develop your presentation (during the 'deciding what to think' phase) and it will help you keep your ideas aimed at the right sorts of issues and questions.

■ How does moderation work in TOK?

The PPD's second use is as the primary moderation tool. What does this mean?

In IAs, your teachers are your primary examiners, but the IB needs to know that they are applying the assessment criteria properly. The way they do this is through a process called 'moderation'.

This is how it works. Your teachers will tell the IB what marks you have received for your IA. The IB then asks for a sample of (a few examples of) those IAs so they can see them. They then check to make sure that your teacher's mark is justified. If the sample shows that your teachers are marking appropriately on those examples, then your teacher's marks are accepted for *all* the others. If the marks are not justified, the moderators have to decide whether your teacher is too generous or not generous enough and raise or lower the marks in each of the samples, and this is applied to the other marks from your school.

TOK is slightly different, in that the moderators don't *see* the actual presentation. But they still have to judge the quality of the teachers' marking. That is where the PPD comes into play. On the PPD, the teachers have to fully justify the mark they have given you. You can help this process by filling out the student's sections thoroughly. The moderator will be looking at what you write in your sections in order to help them confirm the marks of

your teacher. The best way to do this is to prepare and then include the specific points you are going to make on the PPD. This is why the PPD should be completed at the end of your planning process (but before you present); you need to know what you think and what you are going to present in order to fill it out fully. If the moderator can find evidence in your own comments that the teacher's marks are justified, then your teacher's marks will stand.

One word of advice: if you put it into the PPD, it better be in the presentation as the presentation is what your teacher is assessing, not the PPD. So when you are taking notes while planning your presentation, keep them, as those ideas are what you want to put into the PPD (provided they are also in the presentation), so that the moderator can find the evidence that will justify your teacher's words of joy and admiration and the (hopefully) outstanding mark you earned.

■ Filling out the PPD

To help make sure that the moderation process works well then, here is some advice on how to fill out the various sections of the PPD. The main advice is to give genuine content. This content will help support the teacher's marking and give the moderator what is needed to confirm your teacher's marks.

Session

- This will either be 'May' or 'November' followed by the year you are taking the course. So you will enter for example 'May 2017' or 'November 2017'.

Title

- The title doesn't matter too much. Many students just use the knowledge question.

Describe your real-life situation

- Don't spend too many words giving needless description. Describe only those elements of the real-life situation which are relevant to the analysis you are setting up. The real challenge is not how best to describe the real-life situation, but the choice of real-life situation. (See my advice, above, on how to choose a real-life situation.) You should also describe where you encountered the real-life situation. Did you read an article? Did you see it on the news? In a textbook? During your IA? You only need one real-life situation. Consider using experiences from your own creation of knowledge in school, but make sure that your analysis is not about you but about the shared community of the AOK.

State your central knowledge question (this must be expressed as a question)

- Be sure to follow the advice in Chapter 1 on how to formulate a good knowledge question. The number one reason why TOK presentations are not successful is because they are not based on genuine or well-formulated knowledge questions. Starting from a poorly conceived (not just poorly worded) knowledge question makes it very challenging to deliver a genuine TOK analysis. Remember, the moderators can see exactly what the knowledge question is, so it better be good!

- Make sure also that you are following the directions and stating it in the form of a question. Again, you only need one main knowledge question.

Explain the connection between your real-life situation and your knowledge question

- This is where your moderator will see your first genuine analysis. Do not leave it up to the moderator to work out the connections between the knowledge question and the real-life situation – *you* must explain how they are connected. Explain how you get from the specifics of the real-life situation to the abstract question about knowledge.
- This means you should expect to have two levels of language: language specifically about the real-life situation, but then also language about knowledge.

Outline how you intend to develop your presentation, with respect to perspectives, subsidiary knowledge questions, arguments, and so on. Responses can be presented in continuous prose or as bullet points.

- This is where you outline the main elements of your argument – describe the main ideas and concepts you are dealing with, the connections between them and how they progress towards an answer to the title.
- Your outline does not have to include all the elements mentioned in the section's prompt. They are there to help you remember to include what you *do* have.
- You don't have to include in any of these sections the exact words you have used in the presentation. The words you use in the presentation and the words on the PPD don't have to be the same. You might write on the PPD, for instance, 'I will argue that the particular type of historical education that an historian receives will influence how he selects and interprets evidence', but not say this in exactly the same way in the presentation. The material on the PPD is about the ideas you have dealt with (discovered during the 'deciding what to think' step of the two-step process), not about what went on what slide.
- The most important thing is that you need to show genuine content to the moderators. Don't just say, 'I will develop the knowledge question' or, 'I will explore history as an AOK'; you must tell the examiner what that development will be or exactly what you will be saying about that AOK. The moderators must see your thinking and your conclusions in writing, but briefly. You do not want to write out the entire presentation, but you should be telling the moderators what your ideas are. One way you might do this is to try to write down, in a sentence, the subsidiary conclusions you arrived at during your analysis. For each of these you could include a sentence or two to explain and develop it. For this reason, you must do some genuine planning ahead of time, then summarise that planning here.

Show how your conclusions have significance for your real-life situation and to others

- The conclusions you are attempting to establish are conclusions about some aspect of knowledge. Your job has been to support a claim about knowledge, not support one side or another of some discipline-based question. Your conclusion in an ethics-based presentation will not be something like, 'Therefore we conclude that capital punishment is wrong' because this is about the ethical dilemma. Rather it might be something like, 'Therefore we can conclude that the natural sciences are more reliable than history, primarily because of the ability to replicate experiments.'

- In this section you also need to show genuine content. 'I will now discuss my conclusions' is not something a moderator can use to get a sense of the quality of the presentation. If you wrote only this, and your teacher said that your conclusions were genuinely surprising and showed real insight, there would be no evidence to suggest that your teacher was correct. Give content so your teacher's comments will be justified.
- In this section you will wrap up the main themes of the presentation and clearly identify the outcomes (those ideas which you are arriving at after a careful analysis). Because the main analysis of the knowledge involved has been decontextualised from the real-life situation, this is where you place the real-life situation back into the context of the knowledge question. How does what you have discovered about knowledge help you to understand the original real-life situation?
- Also, because your analysis has been an abstract exploration of knowledge, you can show how the conclusions you arrived at can help you understand some other real-life situation or the real-life situation in a wider context. Good presentations often identify slightly different real-life situations which are related but which can be used to draw out slightly different points about knowledge.

Teacher's comments: 'Provide comments to support your assessment of the presentation'

- This section is really the whole point of the PPD. Moderation means that the IB needs to see that the teachers are marking correctly, so the teacher's role here is to justify the mark he or she has placed in the box. The burden of the PPD rests with the teacher: he or she must show that they used the assessment instrument properly and that the mark awarded to the student is the correct one. The student's section is to support the moderator's judgements of the teacher's mark, so following the advice for the student section will make the process go more smoothly.
- Teachers must show their thinking (just like they ask their students to do). They must include far more than just a narrative of the student's presentation or more than just a cut and paste from the assessment description. Good comments will include specific reference to what the student has said, and link that directly to aspects of the assessment criteria. The moderators want to know how the teacher is applying the criteria, so a genuine evaluation of the presentation is required. Teachers should explain what it is about the presentation that fits with this level descriptor and might even explain why he or she has not given a level higher or a level lower.

As I mentioned before, the TOK presentation is one of my favourite elements of the course. IB students are generally genuinely interesting people with lots of interesting things to say. I am impressed every year with the ingenuity and imagination demonstrated by students in their presentations and the impact they have on me and the other students. Students, however, often find them quite stressful. My advice for them is to take it slow, start early, and don't worry too much about your student-colleagues: they are all in the same boat as you! Use the presentation as a genuine exploration of something that interests you and it won't feel like work (or at least it will feel like less work).

Glossary

- areas of knowledge (AOK)** these are the general categories into which the traditional disciplines of knowledge are placed. The TOK course identifies eight but there is no reason to assume that there are only eight or even that the major disciplines (biology, economics, visual arts, and so on, must fit into the categories they are placed within)
- confirmation bias** interpreting data in a way that supports what you already believe, or only selecting to data which supports a view you already hold
- first-order knowledge** knowledge within a discipline, constructed using the agreed upon methods of that discipline
- knowledge framework** a framework offering five elements which facilitates a close analysis of a discipline and, by using the various elements, a comparison between the AOKs
- knowledge question** a second-order question about the nature, construction or the application of knowledge
- logical fallacy** using logic or reason in a way that appears correct but upon closer analysis is flawed
- objective knowledge** claims whose truth depends on evidence or 'facts' publicly available to a community, or claims about such publicly available facts
- paradigm** sets of related beliefs which are used to understand the world around us
- personal knowledge** as opposed to 'shared knowledge', knowledge that is held or constructed by an individual. Often characterised by 'I know ...' (see page 18 of the TOK Subject Guide for more)
- real-life situation** in TOK, a concrete situation which raises a second-order knowledge question
- second-order knowledge** knowledge about the construction of, nature of, development of, or the having of knowledge
- shared knowledge** facts and claims that are shared by a community of knowers. Often characterised by 'We know ...' Not just knowledge that has been communicated, but knowledge which is the product of methods or concepts agreed upon by a community (see page 18 of the TOK Subject Guide for more)
- straw man fallacy** to construct a weak and trivialised opposing position then argue against it, thereby implying that your position is stronger. Literally originating from the straw practice dummies used in martial arts – they can't fight back
- subjective knowledge** knowledge or claims whose truth depends on an individual's taste or opinion
- ways of knowing (WOK)** eight features of human cognition or experience which can be the source of knowledge. Offered as tools by which the construction of knowledge can be explored. While the IB identifies eight, this is not to suggest that there are *only* eight

Index

■ A

Abu Ghraib 57–59
 acquisition of knowledge 8
 analysis 68–69, 90–93, 108–110
 areas of knowledge (AOKs)
 comparing or contrasting 16–17
 concepts and language 22–25
 historical development 34–38
 links to personal knowledge 38–47
 methodology 25–33
 scope and applications 18–22
 use in essays 96–97
 argument plan 80–81, 111–112
 arts 40, 41–42
 assessment 64–117
 analysis 68–69
 checklist 64
 description 68
 essay 73–102
 evaluation 69
 general advice 64–67
 implications 70–72
 instrument 99–101
 presentation 102–117
 significance 70, 72–73
 two-step process 66–67
 understanding 64–65
 authority 28, 31

■ B

Bowles, Peter 41–42
 brainstorming 75–77, 111

■ C

collaborating 76
 Collingwood, R. G. 57
 concepts and language 12, 22–25
 concluding paragraphs 88, 89
 confirmation bias 40
 construction of knowledge 8
 counter-arguments 88–90
 vs. counter-claims 98
 counter-claims 97
 vs. counter-arguments 98

■ D

Dawkins, Richard 26–30
 description 68
 dictionary definitions 82
 discursive essays 82–85, 87
 Donner Party 45–46

■ E

Earhart, Amelia 53–54, 59
 Enlightenment 25–26

essays, TOK 73–102
 AOKs, use of 96–97
 argument plan 80–81
 assessment criteria 73
 assessment instrument 99–101
 beginning to write 78–79
 brainstorming 75–77
 concluding paragraphs 88, 89
 counter-arguments 88–90
 counter-claims 97
 deciding what to think 67, 74–75
 discursive 82–85, 87
 elements of a good 87–90
 examples and analysis 90–93
 ‘help’ websites 98–99
 ideas and suggestions 90–99
 introductory paragraph 87–88, 89, 90
 knowledge questions 12–13, 79, 88, 93–94
 making decisions 79
 personal approach 98
 persuasive 85–87
 Planning and Progress Form 101–102
 signposting 84
 top ten tips 60–61
 WOKs, use of 94–96
 writing to present 81–82

ethics

Abu Ghraib 57–59
 personal and shared knowledge 56, 57–58
 religious knowledge and 21
 science and 32–33
 second-order questions 9
 ‘trolley problem’ 33

evaluation 69

examples and analysis 90–93

■ F

first-order knowledge 5, 6
 flag ritual 43
 Fleischmann–Pons cold fusion 53, 59

■ G

global impression marking 65, 68
 ‘Good and Bad Reasons for Believing’ (Dawkins) 26–30
 Gould, Stephen Jay 19–20

■ H

historical development 34–38, 51–52
 history
 bias 71
 comparing science and 23, 35

personal and shared knowledge
 53–54, 57
 scope and application 19, 40

■ I

implications 70–72
 ‘interactions’ 101–102, 113
 introductory paragraphs 87–88, 89, 90

■ K

knowledge, elements of 7–9
 knowledge framework 14–15
 comparing or contrasting AOKs 16–17
 concepts and language 22–25
 to explore AOKs 97
 historical development 34–38
 links to personal knowledge 38–47
 methodology 25–33
 scope and applications 18–22
 usefulness 16
 ways of using 16–47
 knowledge questions 4–13
 assessment criteria 93–94
 choosing 108
 concepts and vocabulary 12
 defining good 5
 in essays 12–13, 79, 88
 general questions 11–12
 Level 5 descriptors, achieving 100–101
 must be about knowledge 5–11
 open questions 11
 presentations 13, 106–108
 and subject questions 4
 unanswered 13
 WOKs use in 10–11
 Kuhn, Thomas 37

■ L

language and concepts 12, 22–25
 level descriptors 65, 70, 100–101
 lists 94–95
 logical fallacy 41
 Logical Positivists 26

■ M

MacCumhaill, Fionn (legend) 44–45
 mathematics 22, 97
 historical development 35–36, 51–52
 interplay of physics and 9, 32, 60, 106
 methodology 25–33
 moderation 114–115
 myths 44–46

■ N

nature of knowing 9
 nature of knowledge 8–9

- Nonoverlapping Magisteria (NOMA)
19–20
- **O**
- objective knowledge 54–55
observation 25–26, 27, 30, 32
open questions 11
- **P**
- paradigm shifts 36–37, 91
personal approach 98
personal knowledge 50
 influencing shared community
 knowledge 39–42
 links to knowledge framework
 38–47
 shared community knowledge
 influencing 42–47
personal knowledge, relationship
 between shared and 48–54
 Abu Ghraib example 57–59
 objective/subjective knowledge
 54–56
 propositional and non-propositional
 knowledge 52–53
persuasive essays 85–87
physics
 interplay of mathematics and 9, 32,
 60, 106
 shared knowledge 51, 53
plagiarism 98–99, 101
Planning and Progress Form (PPF)
 101–102
predictions 27
premises 81, 86–87
Presentation Planning Document (PPD)
 113–117
presentations 102–117
 analysis 108–110
 argument plan 111–112
 beginning to write 111
 brainstorming 111
 deciding how to present 112–113
 deciding what to think 111–112
 delivery 65
 interactions 113
 knowledge questions 13, 106–108
 level descriptors 65, 70
 making decisions 111
 Presentation Planning Document
 113–117
 real-life situations 103–105, 110
 specific advice 102–103
 top ten tips 62–63
 two-step process 102, 111–113
propositional and non-propositional
 knowledge 52–53
- **R**
- real-life situations 103–105, 110
religious knowledge 24, 31
 ethical knowledge and 21
 myths 44
 science and 19–20
 shared knowledge 42, 43, 44
 WOK and 95–96
religious traditions 27–28, 29–30, 43
revelation 28–29, 31
rituals and traditions 42–44
Rowbotham, Sheila 34, 35
- **S**
- science
 comparing history and 23, 35
 ethics and 32–33
 historical development 34, 35
 knowledge framework to explore 97
 methodology 26–33, 37
 objective knowledge 54
 paradigm shifts 37, 91
 personal knowledge and influence
 40–41, 54
 religion and 19–20
 shared knowledge 51, 53
 ‘theory’ in 23
 ‘truth’ in 22
scientific method 33, 54
scope and applications 18–22
second-order knowledge 5, 6, 7, 9
shared knowledge 51, 55
 influencing personal knowledge
 42–47
 personal knowledge influencing
 39–42
 shared knowledge, relationship
 between personal and 48–54
 Abu Ghraib example 57–59
 objective/subjective knowledge
 54–56
 propositional and non-propositional
 knowledge 52–53
significance 70, 72–73
signposting essays 84
straw man fallacy 20, 89
subject questions 4
Subject Reports, TOK 90
subjective knowledge 54, 55–56
- **T**
- target questions 65, 75
theme, developing a 84–85
theory, different meanings 23
thesis of an essay 85–86, 87
tradition 27–28, 29–30, 31
 and rituals 42–44
‘trolley problem’ 33
truth, different meanings 22, 23
two-step process 66–67, 102,
 111–113
- **W**
- ways of knowing (WOKs)
 comparing AOKs using 17
 in essays 94–96
 in knowledge questions 10–11
websites, ‘help’ 98–99
Wiles, Andrew, ‘solving’ Fermat’s last
 theorem 35–36, 51–52
word processing software 78
writing
 to present 81–82
 to think vs. writing to communicate
 60

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